



EDGE OF WATER

PAVED ROADWAY \_\_\_\_ UNPAVED ROADWAY OR TRAIL

++++++++ RAILROAD

PROPERTY BOUNDARY J9-23-11 PROPERTY ID

1 PPM PCB ISOPLETH

#### NOTES:

- THE BASE MAP FEATURES PRESENTED ON THIS FIGURE WERE PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
- THE 1 PPM PCB ISOPLETH IS APPROXIMATE, AND WAS DERIVED USING HYDRAULIC MODELING PERFORMED BY BLASLAND, BOUCK & LEE, INC. (1995/1996), AVAILABLE TOPOGRAPHIC MAPPING, AVAILABLE FLOOPDLAIN SOIL PCB DATA, AND BEST PROFESSIONAL JUDGEMENT.
- 3. TAX ASSESSORS' PARCEL IDENTIFICATION NUMBERS AND BOUNDARY INFORMATION OBTAINED FROM CITY OF PITTSFIELD'S TAX ASSESSOR'S OFFICE AND IS CURRENT THROUGH SEPTEMBER 5, 1997.

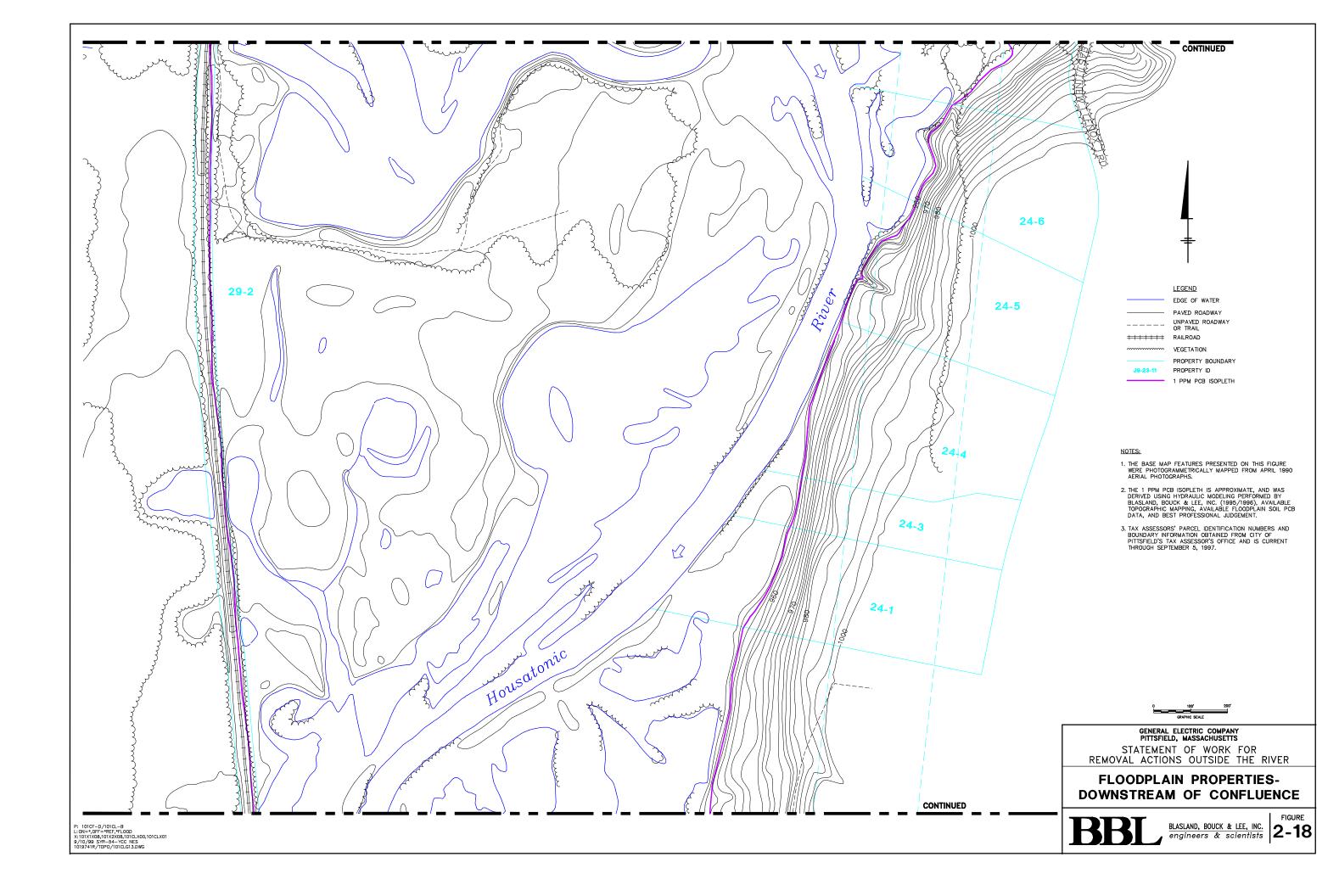


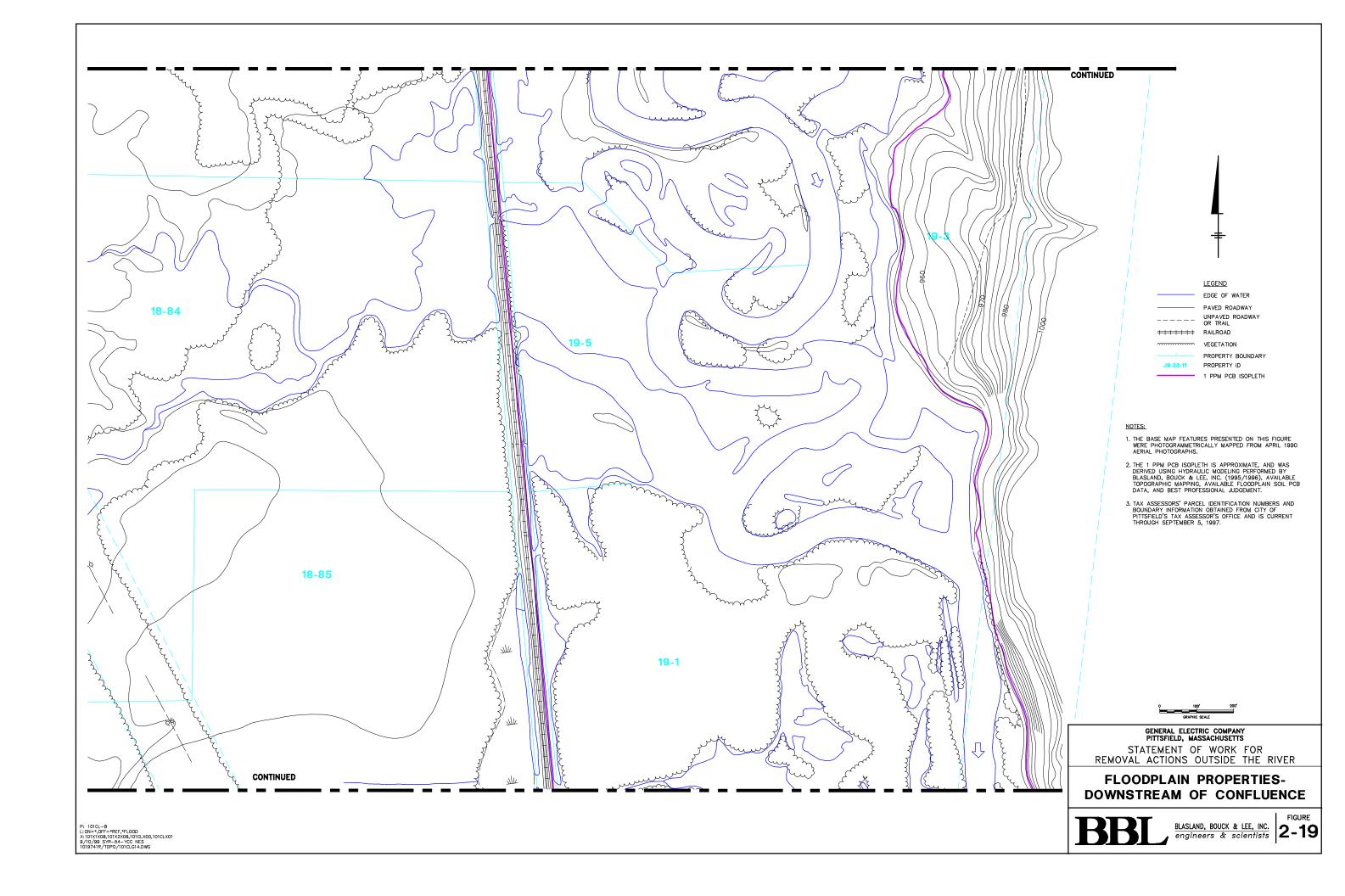
### GENERAL ELECTRIC COMPANY PITTSFIELD, MASSACHUSETTS

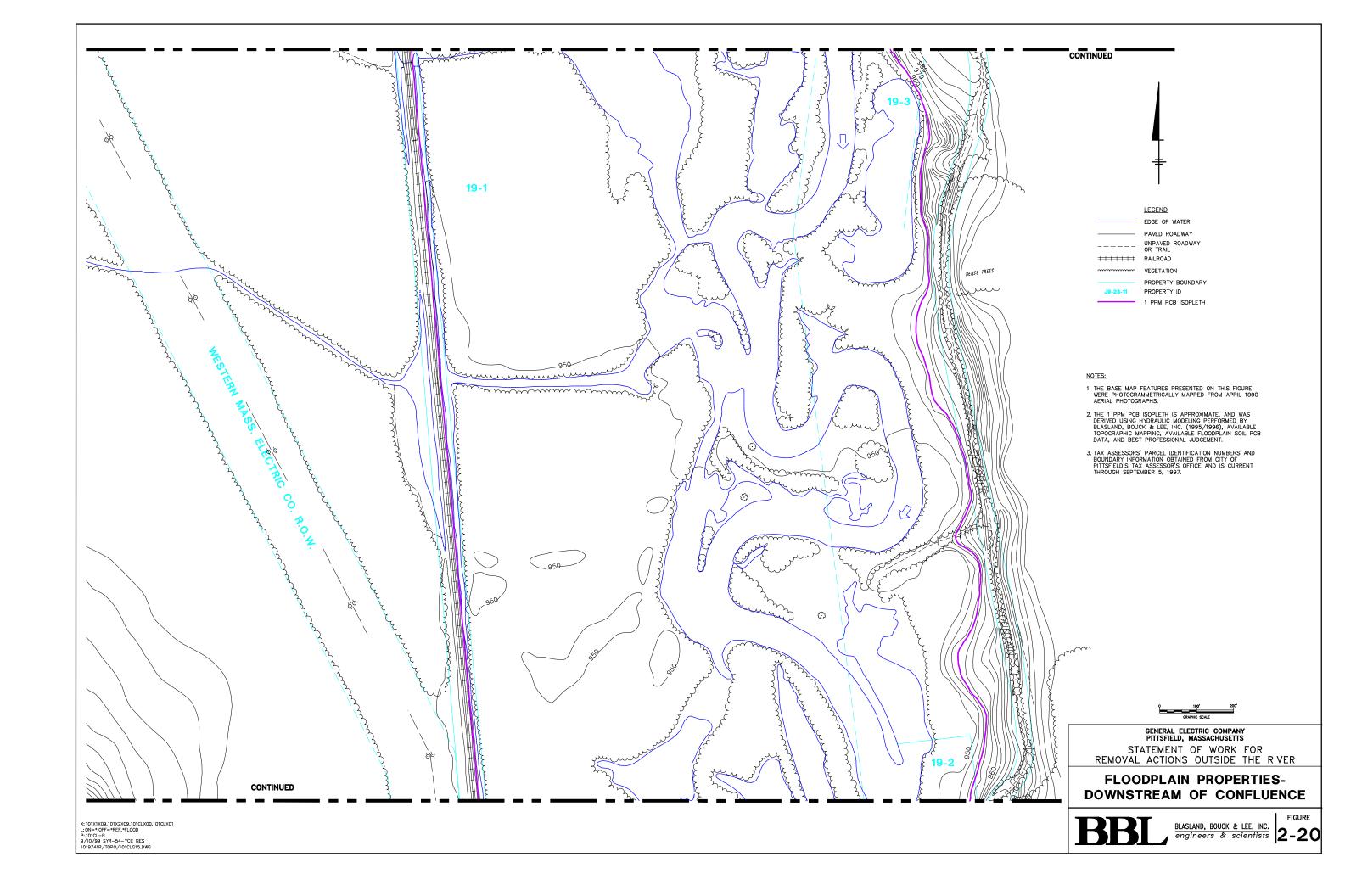
STATEMENT OF WORK FOR REMOVAL ACTIONS OUTSIDE THE RIVER

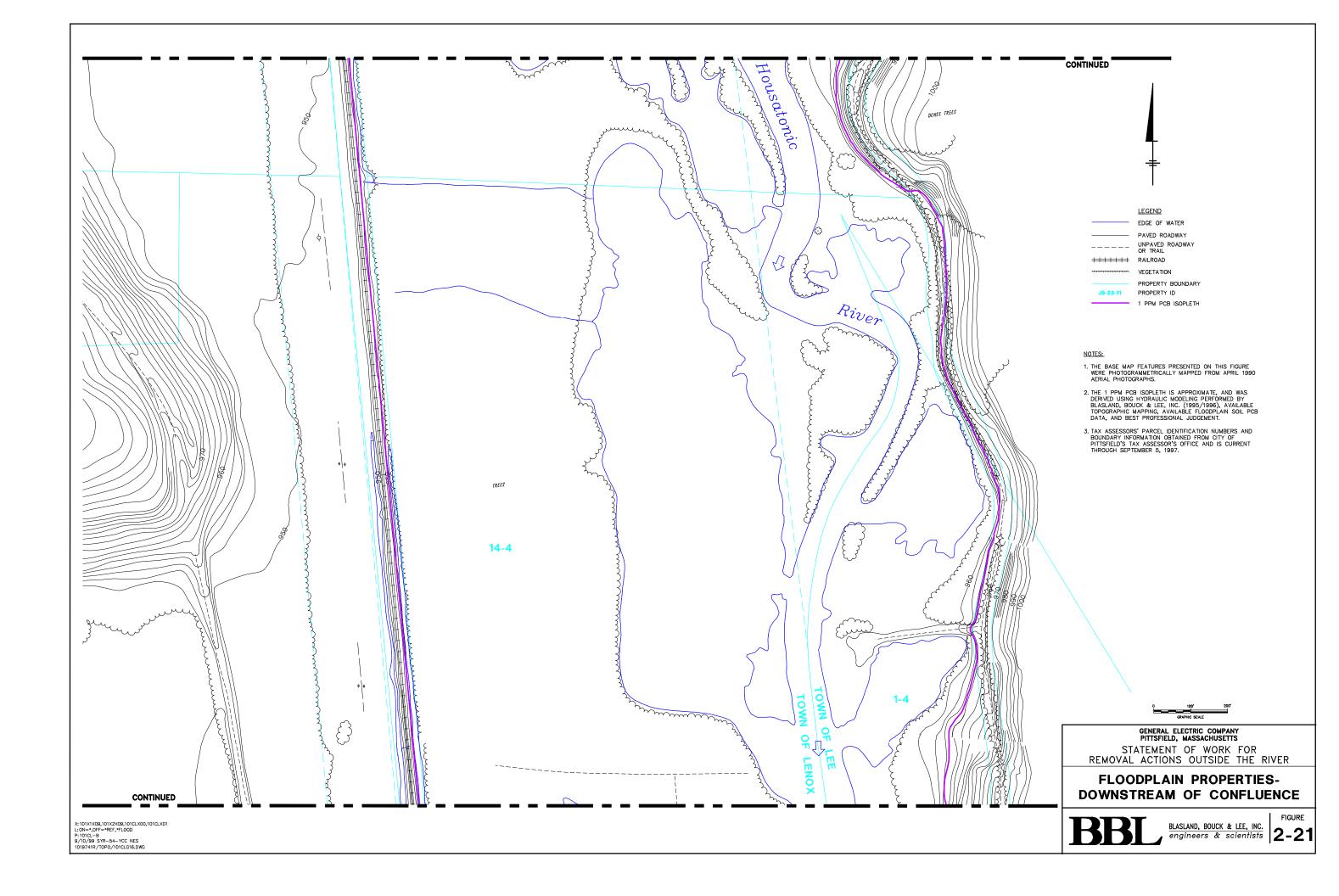
#### FLOODPLAIN PROPERTIES-DOWNSTREAM OF CONFLUENCE

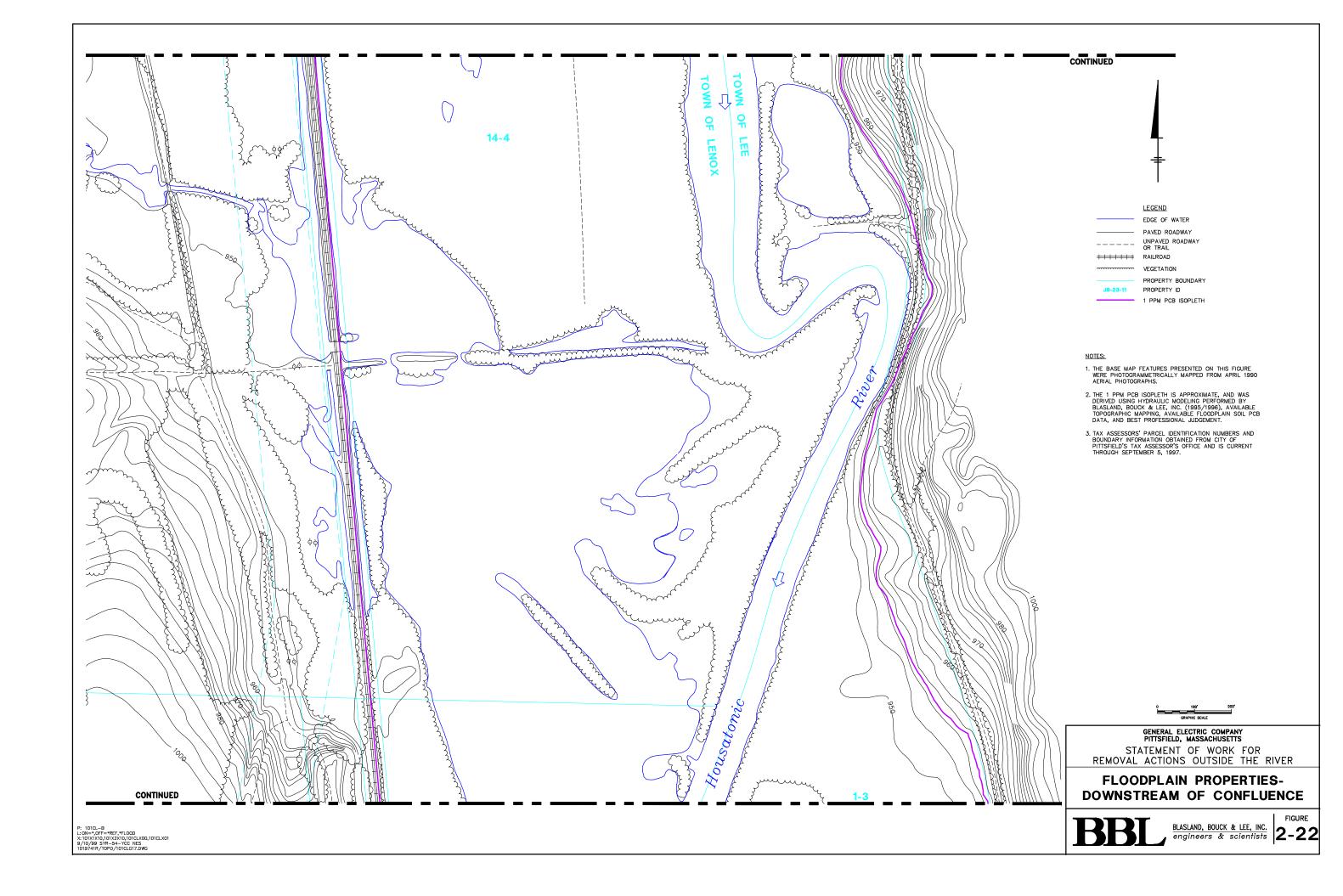


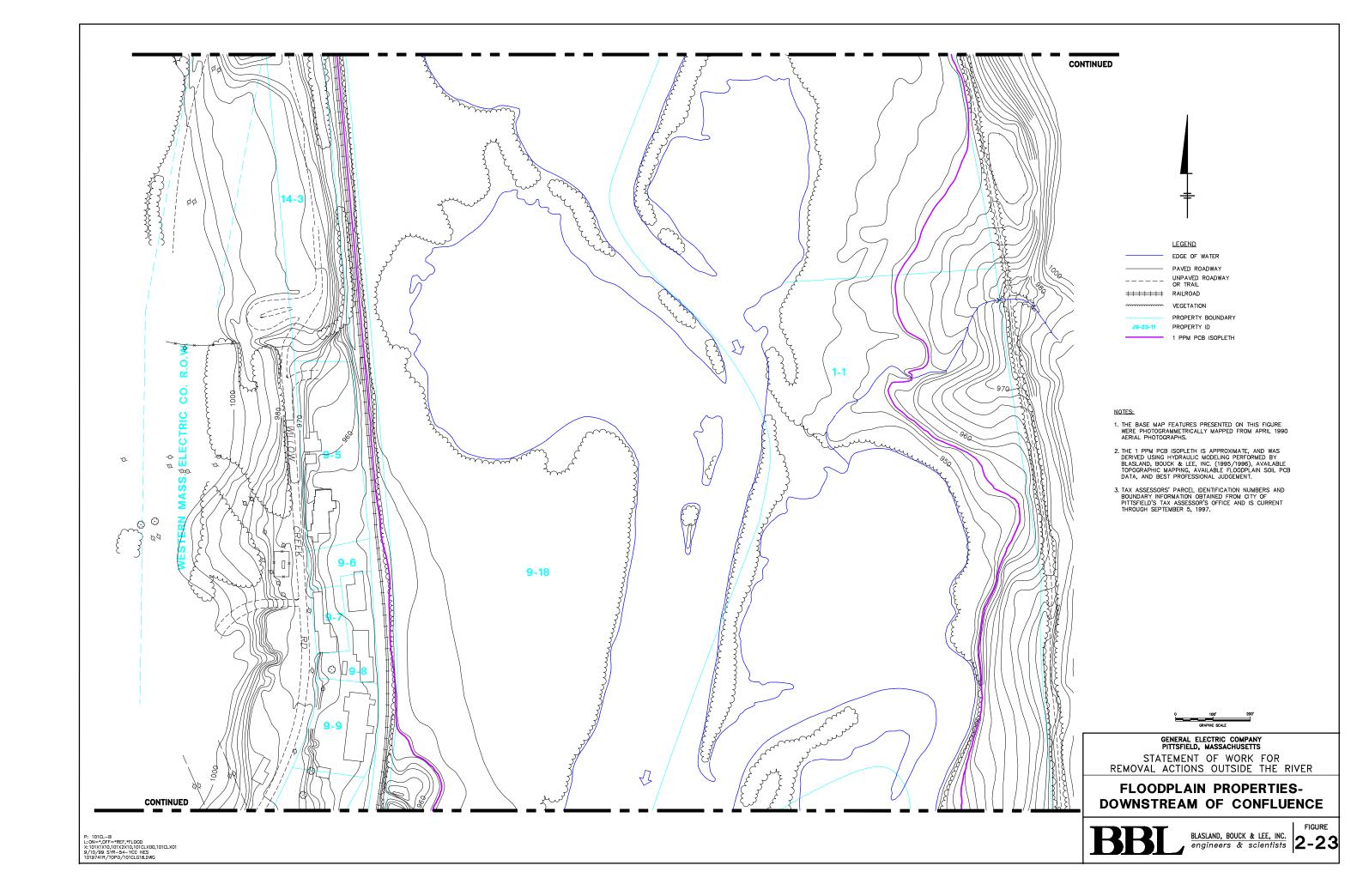


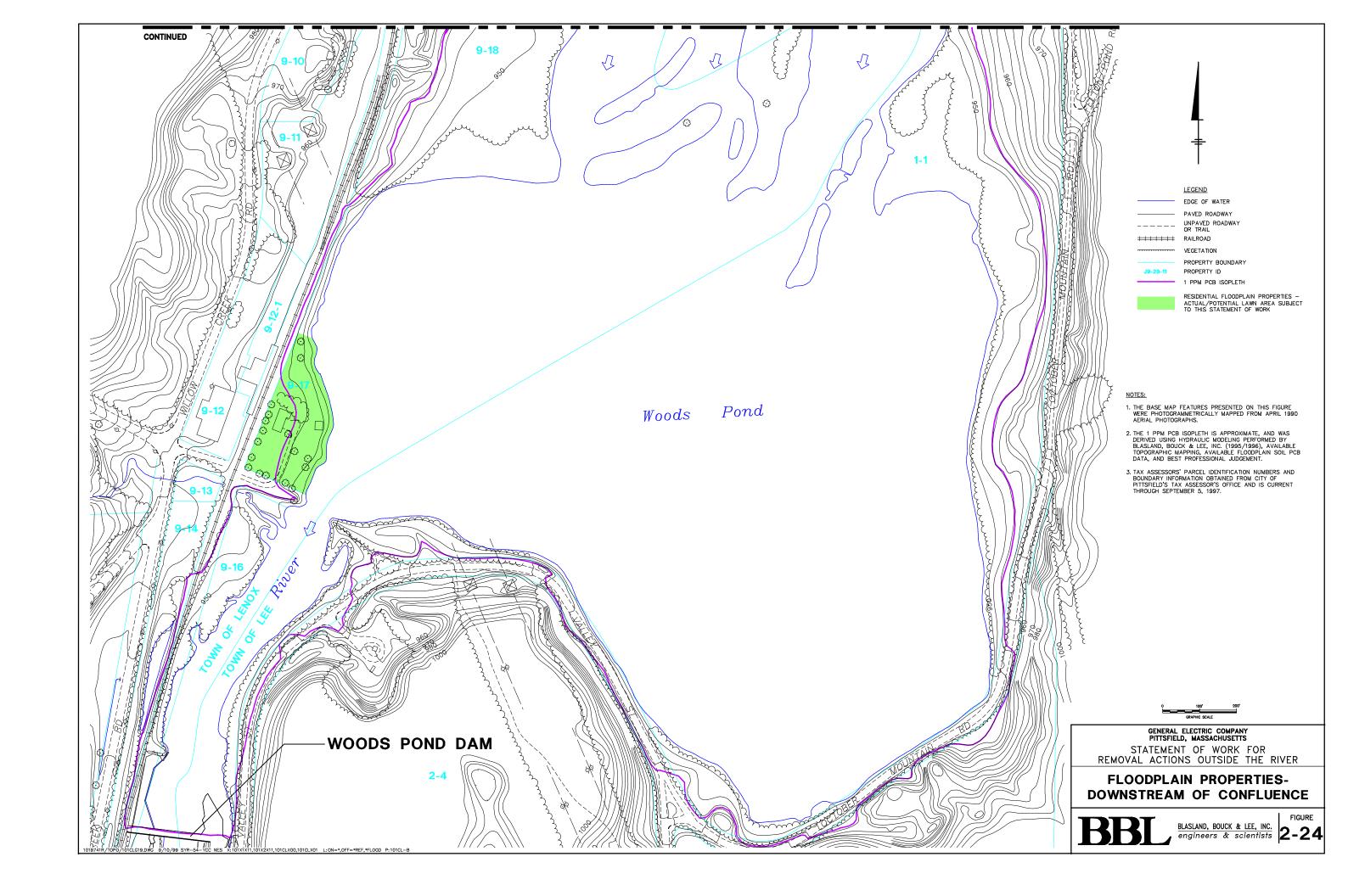


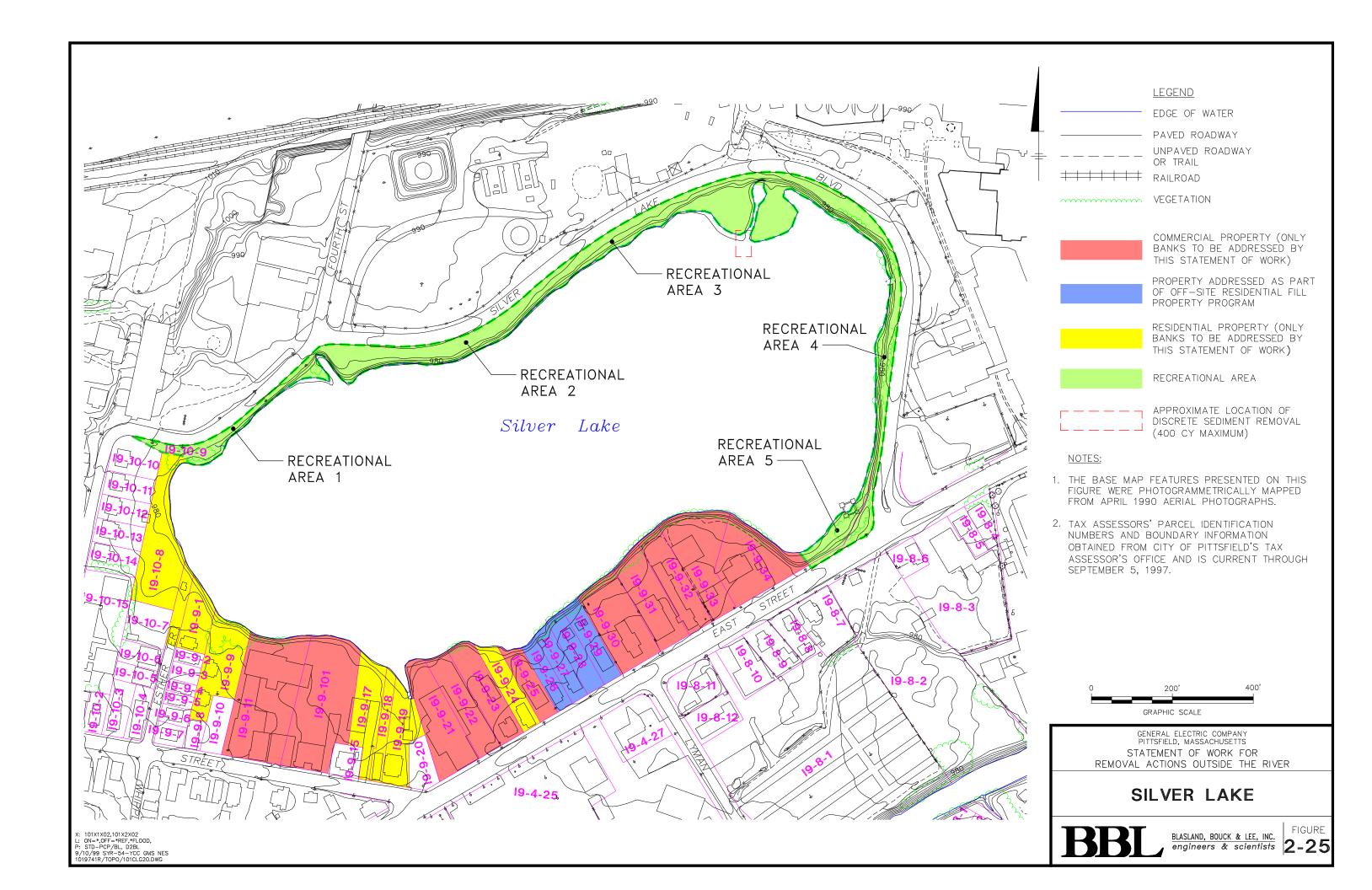


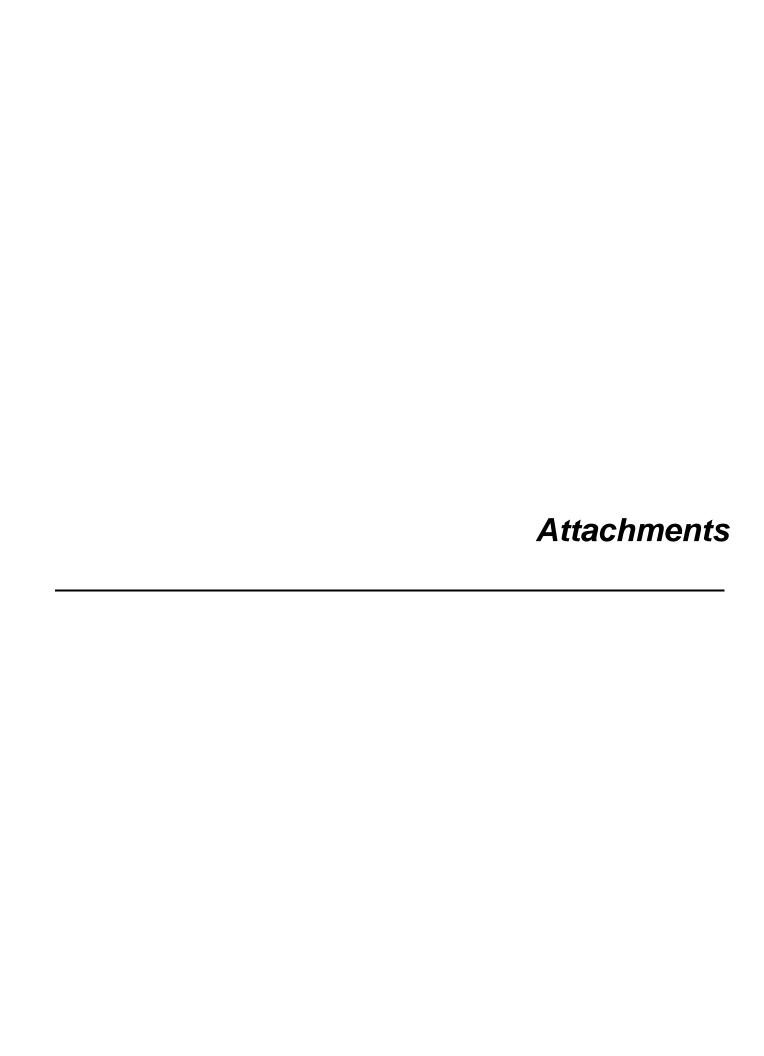


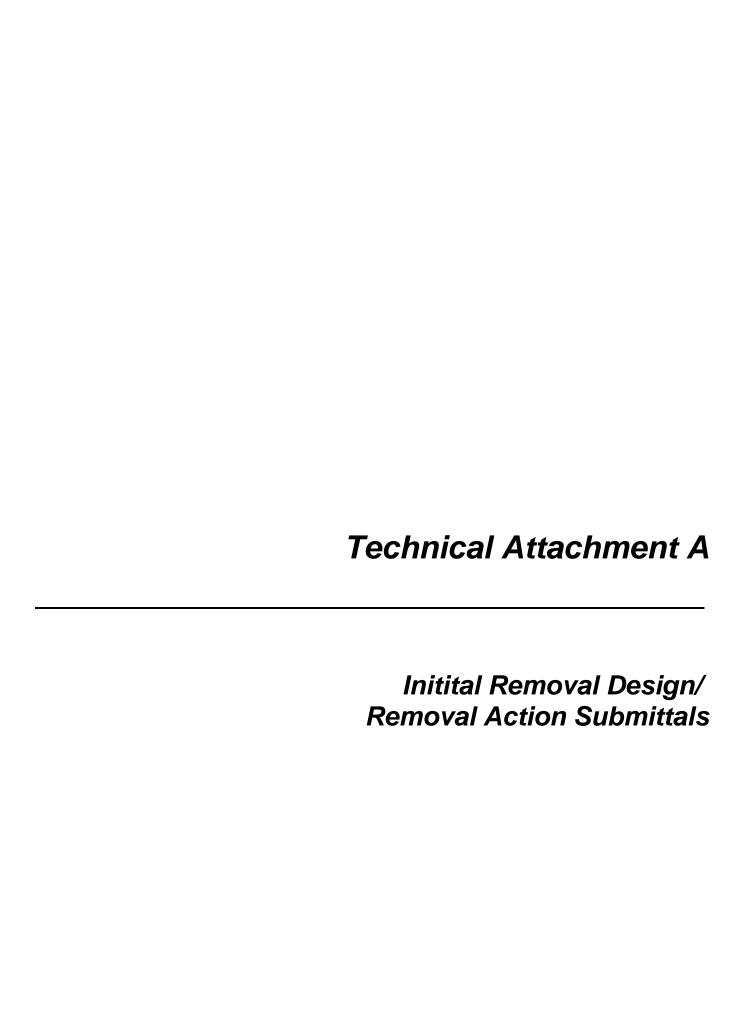












#### TECHNICAL ATTACHMENT A

### INITIAL REMOVAL DESIGN / REMOVAL ACTION SUBMITTALS 1,2

			Deadline for Initial RD/RA Submittal (Following Entry of Consent Decree
Remo	oval Ac	tion	unless Otherwise Specified)
A.	Proje	ect Operations Plan	
	1.	FSP/QAPP Portions	3 months from lodging
	2.	Other Portions	2 months from entry
В.	GE P	Plant Area	
	1.	20s Complex / 30s Complex / 40s Complex	3 months from lodging
	2.	East Street Area 2 - South	12 months from entry
	3.	East Street Area 1 - North	18 months from entry
	4.	Unkamet Brook Area	24 months from entry
	5.	East Street Area 2 - North	30 months from entry
	6.	Hill 78 Area - Remainder	40 months from entry
C.	Form	ner Oxbow Areas	
	1.	Former Oxbow Areas J and K	20 months from entry
	2.	Newell Street Area I	5 months from lodging
	3.	Newell Street Area II	12 months from entry
	4.	Lyman Street Area	18 months from entry
	5.	Former Oxbow Areas A and C	24 months from entry

#### D. Housatonic River Floodplain

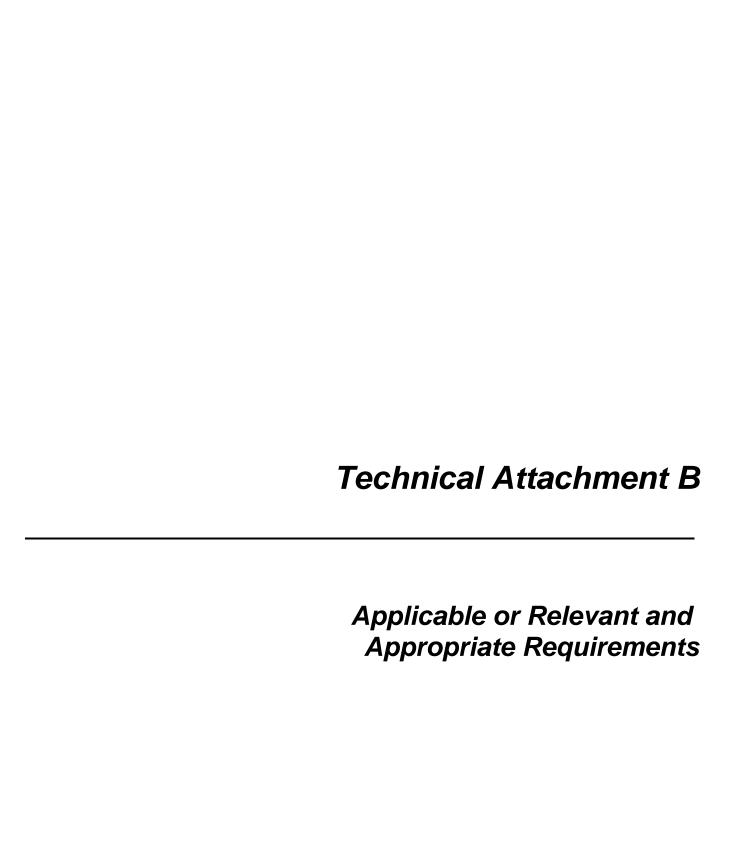
- 1. Floodplain Current Residential Properties Adjacent 16 months from entry to 1½-Mile Reach Actual / Potential Lawns
- 2. Floodplain Non-Residential Properties Adjacent 14 months from entry to 1 ½-Mile Reach (Excluding Banks) (3)
- 3. Floodplain Residential Properties Downstream of 16 months from entry Confluence Actual / Potential Lawns

#### E. Silver Lake Area

18 months from entry

#### Notes:

- 1. Schedule does not include: (a) Removal Actions for which the Pre-Design and Removal Design / Removal Action Work Plans were submitted and approved prior to lodging of the Consent Decree (i.e., the Allendale School Removal Action and the Hill 78 Consolidation Area and Building 71 Consolidation Area Removal Actions); or (b) the source control activities within East Street Area 2-South, Lyman Street Area, and Newell Street Area II. This schedule also does not include a timetable for the initial submittals for the groundwater/NAPL-related Removal Actions, which is set forth in Attachment H to this SOW.
- 2. Initial RD/RA submittal is a Pre-Design Investigation Work Plan, unless otherwise specified in this SOW.
- 3. The schedule included in the Pre-Design Investigation Work Plan for the Floodplain Non-Residential Properties Adjacent to 1½-Mile Reach (Excluding Banks) will incorporate phased timing for subsequent work based upon the location of each property and EPA's progress on the sediment and banks of the 1.5-mile reach.



#### **Chemical-Specific ARARs**

#### **PCBs and Other Constituents**

Regulation	Citation	Criterion/Standard	Applicability/Appropriateness	Determination Re Attainment			
Federal ARARs	Federal ARARs						
Clean Water Act, Ambient Water Quality Criteria	33 USC 1313, 1314 40 CFR 131.36(b)(1) 63 Fed. Reg. 68354	Establishes national recommended surface water quality criteria for various constituents for protection of human health and aquatic life (see Table 2, Item A for PCB criteria) and requires state water quality standards for same protective purposes.	Relevant and appropriate.	These criteria (which are incorporated in Mass. Water Quality Standards) will be used to develop groundwater performance standards, pursuant to 310 CMR 40.0983(4), for those constituents for which Method 1 GW-3 standards do not exist. See Attachment H to SOW. If these criteria are not attained in surface waters at or adjacent to Removal Action Areas, no further response actions to attain the criteria shall be required as part of these Removal Actions (beyond the actions described in the SOW), because EPA has determined that such further response actions are not practicable as part of these Removal Actions.			

#### **Chemical-Specific ARARs**

#### PCBs and Other Constituents (cont'd)

Regulation	Citation	Criterion/Standard	Applicability/Appropriateness	Determination Re Attainment
State ARARs	•			
Mass. Water Quality Standards	314 CMR 4.05(5)(e)	Establishes federal water quality criteria as state water quality standards (allowable water quality concentrations) for toxic pollutants.	Relevant and appropriate.	See above discussion of Clean Water Act, Ambient Water Quality Criteria.
<b>Guidances Considered</b>		L		
Cancer Slope Factors (CSFs)		Guidance values used to evaluate the potential carcinogenic risk caused by exposure to contaminants.	To be considered.	EPA considered this guidance in the development of the Removal Actions.
Reference Doses (RfDs)		Guidance values used to evaluate the potential non-carcinogenic hazard caused by exposure to contaminants.	To be considered.	EPA considered this guidance in the development of the Removal Actions.
PCBs: Cancer Dose - Response Assessment and Application to Environmental Mixtures	EPA/600/P-96/001F (September 1996)	Guidance regarding EPA's reassessment of the carcinogenicity of PCBs. It includes revised cancer slope factors for PCBs based upon the exposure pathway.	To be considered.	EPA considered this guidance in the development of the Removal Actions.

#### Action-Specific ARARs

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs				
Toxic Substances Control Act (TSCA) Regulations (Disposal of Discharge Water containing PCBs)	40 CFR 761.50(a)(3)	Prohibits discharge of water containing PCBs to navigable waters unless PCB concentration is < approximately 3 ppb or in accordance with discharge limit of NPDES permit.	Applicable to discharge of treated waters to Housatonic from NAPL and groundwater recovery operations.	Will be attained. Discharges of treated water from NAPL and contaminated groundwater recovery operations will be from GE's existing Ground-Water Treatment Facility (via NPDES-permitted outfall) and will meet same effluent limitations as in GE's existing NPDES permit.
TSCA Regulations (Decontamination)	40 CFR 761.79	Establishes decontamination standards and procedures for removing PCBs from non-porous surfaces.	Applicable to decontamination of equipment used in source control activities.	Will be attained by cleaning equipment as necessary in accordance with TSCA regulations.
TSCA Regulations (PCB Marking Requirements)	40 CFR 761.40	Certain PCB items are required to be marked.	Applicable.	Will be attained by marking PCB items subject to these requirements.

#### Action-Specific ARARs

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs (cont'd)				
Clean Water Act NPDES Regulations	33 USC 1342 40 CFR 122, esp. 122.44(a), (e) 40 CFR 125.100104 40 CFR 131	BAT effluent limits for toxic and non-conventional pollutants; BCT limits for conventional pollutant; water-quality based effluent limitations; best management practices to prevent release of toxics to surface waters from ancillary areas or spills. Discharges in accordance with instruction of On-Scene Coordinator acting pursuant to NCP are exempt from NPDES permit requirements.	Applicable to point source discharges of treated waters to River.	Will be attained. Discharges of treated water from NAPL and contaminated groundwater recovery operations will be from GE's existing Ground-Water Treatment Facility (via NPDES-permitted outfall) and will meet same effluent limitations as in GE's existing NPDES permit.

#### **Action-Specific ARARs**

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment		
Federal ARARs (cont'd)	Federal ARARs (cont'd)					
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	Discharges of stormwater associated with construction activities are required to implement measures, including best management practices, to control pollutants in stormwater discharges during and after construction activities.	Applicable to discharges of stormwater.	Will be attained by implementing erosion and sedimentation controls and stormwater management measures.		

#### **Action-Specific ARARs**

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Clean Water Act Ambient Water Quality Criteria	33 USC 1313, 1314, 1317 40 CFR 131.36(b)(1) 40 CFR 122.44 63 Fed. Reg. 68354	Establishes national recommended surface water quality criteria and requires state water quality standards and national effluent standards all to be used in establishing effluent limitations for point source discharges.  PCB water quality criteria:  • For protection of freshwater aquatic life due to chronic exposure: 0.014 ppb  • For protection of human health from consumption of water and organisms: 0.00017 ppb	Relevant and appropriate for settling effluent limitations for point source discharges of treated water to river.	Discharges of treated water will meet existing NPDES permit limits. See discussion of Clean Water Act NPDES Regulations on page 2 above. (Regarding attainment in surface waters, see Table 1.)
		Various numerical criteria for other constituents		

#### **Action-Specific ARARs**

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment		
State ARARs	State ARARs					
Mass. Clean Water Act Regulations (Discharge Water Quality Standards)	314 CMR 3.10 314 CMR 3.19 314 CMR 4.04(1-2) 314 CMR 4.05(3)(b) 314 CMR 4.05(5)	State water quality standards for use in setting effluent limitations and other conditions for point source discharges.	Applicable to settling effluent limitations for discharge of treated water.	For effluent discharges, see discussion of Federal Clean Water Act NPDES regulations on page 2 above. (Regarding attainment in surface waters, see Table 1.)		
Mass. Air Pollution Control Requirements	310 CMR 7.09	Prohibition against creating condition of air pollution in connection with dust-generating activities.	Applicable to construction and site alteration activities generating dust.	Will be attained by implementing dust control measures and air monitoring to meet these requirements.		

#### Action-Specific ARARs

#### B. Soil Removal

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment			
Federal ARARs	Federal ARARs						
TSCA Regulations (PCB Remediation Waste)	40 CFR 761.61	Establishes cleanup options for PCB remediation waste, including PCB-contaminated soils. Options include risk-based approval by EPA. Parties seeking risk-based approval must demonstrate that cleanup plan will not pose an unreasonable risk of injury to health or the environment.	Applicable to soils with PCBs \$ 50 ppm that were released into the environment prior to April 18, 1978 and to any PCB waste released after that date where original source was \$ 500 ppm PCBs beginning on April 18, 1978, or \$ 50 ppm PCBs beginning on July 2, 1979.	Will be attained. EPA has determined that Removal Actions, including soil removal, conducted in accordance with Consent Decree and SOW will not pose an unreasonable risk of injury to health or the environment.			
TSCA Regulations (Decontamination)	40 CFR 761.79	See Item A above.	See Item A above.	Will be attained.			

#### Action-Specific ARARs

#### B. Soil Removal (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs (cont'd)				
RCRA Hazardous Waste Regulations (Identification and Listing of Hazardous Wastes; Toxicity Characteristics)	40 CFR 261.24	Identifies concentrations of contaminants which, if present, make a waste a hazardous waste due to toxicity. The analytical test set forth in Appendix II of 40 CFR part 261 is referred to as the Toxicity Characteristic Leaching Procedures (TCLP).	Relevant and appropriate.	Will be attained. Soils to be excavated will be evaluated first using a conservative screening tool (dividing the total soil sample results by 20 and changing the reporting units from mg/kg to micrograms per liter) and comparing the results to allowable concentration limits associated with the TCLP. If exceedances appear to result from this exercise, TCLP testing will be used to determine whether soils are characteristic hazardous waste. Soils that exceed allowable concentrations will either be placed in the Building 71 Consolidation Area or sent off-site to a RCRA Subtitle C disposal facility, as needed. Soils that are determined to be below allowable concentrations and therefore nonhazardous, either through the screening tool or TCLP testing, will either be placed in the Hill 78 or Building 71 Consolidation Areas or sent off-site to an appropriate facility.

#### Action-Specific ARARs

#### B. Soil Removal (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment			
Federal ARARs (cont'd)	Federal ARARs (cont'd)						
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained by implementing erosion and sedimentation controls and stormwater management measures.			
State ARARs							
Mass. Air Pollution Control Requirements	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing dust control measures and air monitoring to meet these requirements.			

TABLE 2

#### Action-Specific ARARs

#### C. Surface Cover Activities (including installation of engineered barriers, other soil covers, and enhancement of pavement)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment			
Federal ARARs	Federal ARARs						
TSCA Regulations (PCB Remediation Waste)	40 CFR 761.61	See Item B above.	See Item B above.	Will be attained. EPA has determined that Removal Actions, including surface cover activities, conducted in accordance with Consent Decree and SOW will not pose an unreasonable risk of injury to health or the environment.			
TSCA Regulations (Decontamination)	40 CFR 761.79	See Item A above.	See Item A above.	Will be attained.			
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained by implementing erosion and sedimentation controls and stormwater management measures.			
State ARARs							
Mass. Air Pollution Control Requirements	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing dust control measures and air monitoring to meet these requirements.			

#### Action-Specific ARARs

#### D. Re-Routing of Unkamet Brook and Capping Former Unkamet Brook Landfill

Regulation	Citation	Requirements	Applicability/Appropriateness	<b>Determination Re Attainment</b>
Federal ARARs				
TSCA Regulations (PCB Remediation Waste)	40 CFR 761.61	See Item B above.	See Item B above.	Will be attained. EPA has determined that Unkamet Brook Area Removal Action, including re-routing of Unkamet Brook and capping the former landfill, conducted in accordance with Consent Decree and SOW will not pose an unreasonable risk of injury to health or the environment.
TSCA Regulations (Decontamination)	40 CFR 761.79	See Item A above.	See Item A above.	Will be attained.
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained by implementing erosion and sedimentation controls and stormwater management measures.
RCRA Hazardous Waste Management Facility Regulations (Standards for Owners and Operators of Hazardous Waste TSD Facilities)	40 CFR Part 264	Massachusetts has been delegated the authority to administer these RCRA standards through its state hazardous waste management regulations. The relevant and appropriate provisions of 40 CFR part 264 are identified below.	Relevant and appropriate.	See below.

TABLE 2

#### Action-Specific ARARs

#### D. Re-Routing of Unkamet Brook and Capping Former Unkamet Brook Landfill (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment	
Federal ARARs (cont'd)					
RCRA Hazardous Waste Management Facility Regulations (Closure and Post-Closure Requirements)	40 CFR 264.111 40 CFR 264.117 40 CFR 264.310(a) 40 CFR 264.310(b)(1) & (5)	Standards for closure and final cover of hazardous waste landfills. Also, requirements for post-closure monitoring and maintenance. Does not include leachate collection and liner requirements.	Relevant and appropriate for capping and post-capping monitoring and maintenance of former landfill, to the extent that it already contains materials that constitute RCRA hazardous waste.	Will be attained. Final cover will meet standards in 264.310(a) for cover/design construction. Post-closure monitoring and maintenance will be conducted in accordance with Attachment J to SOW.	
RCRA Hazardous Waste Management Facility Regulations (Corrective Action Groundwater Monitoring and Protection)	40 CFR 264, Subpart F	Regulated units must monitor groundwater and comply with groundwater protection standards; hazardous constituents that exceed maximum concentration levels or alternative concentration levels must be removed or treated.	Relevant and appropriate to the extent that former landfill already contains materials that constitute RCRA hazardous waste.	Groundwater monitoring by upgradient and downgradient monitoring wells will be conducted in accordance with Attachment H to SOW. Criteria for further response actions to meet groundwater protection standards will be as set forth in Attachment H to SOW. To the extent these measures do not meet all requirements in the cited regulations, EPA has determined that attainment is not practicable.	

#### Action-Specific ARARs

#### D. Re-Routing of Unkamet Brook and Capping Former Unkamet Brook Landfill (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment		
State ARARs	State ARARs					
Mass. Air Pollution	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing		
Control Requirements				dust control measures and air		
_				monitoring to meet these		
				requirements.		
Mass. Hazardous Waste	310 CMR 30.582	Standards for closure and	Relevant and appropriate to	Will be attained. Final cover will		
Management Facility	310 CMR 30.592	final cover of hazardous	capping and post-capping	meet standards in 30.633 for		
Regulations (Landfill	310 CMR 30.633 (1)	waste landfills. Also,	monitoring and maintenance of	cover/design construction. Post-		
Closure and Post-Closure	310 CMR 30.633(2)(a) & (e)	requirements for post-closure	former landfill to the extent it	closure monitoring and		
Care)		monitoring and maintenance.	already contains materials that	maintenance will be conducted in		
		Does not include leachate	constitute hazardous waste.	accordance with Attachment J to		
		collection and liner		SOW.		
		requirements.				

#### Action-Specific ARARs

#### D. Re-Routing of Unkamet Brook and Capping Former Unkamet Brook Landfill (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
State ARARs (cont'd)				
Mass. Hazardous Waste Management Facility Regulations (Corrective Action Groundwater Monitoring and Protection)	310 CMR 30.672	Regulated units must monitor groundwater and comply with groundwater protection standards; hazardous constituents that exceed maximum concentration levels or alternative concentration levels in groundwater must be removed or treated.	Relevant and appropriate to the extent that former landfill already contains materials that constitute hazardous waste.	Groundwater monitoring by upgradient and downgradient monitoring wells will be conducted in accordance with Attachment H to SOW. Criteria for further response actions to meet groundwater protection standards will be as set forth in Attachment H to SOW. To the extent these measures do not meet all requirements in the cited regulation, EPA has determined that attainment is not practicable.

#### **Action-Specific ARARs**

## E. Sediment Removal from Unkamet Brook and Sediment and Bank Soil Removal at Silver Lake (including dewatering prior to disposition in consolidation areas)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment	
Federal ARARs	Federal ARARs				
TSCA Regulations (PCB Remediation Waste)	40 CFR 761.61	See Item B above.	See Item B above.	Will be attained. EPA has determined that Removal Actions, including sediment and bank soil removal from areas in Unkamet Brook and Silver Lake, conducted in accordance with Consent Decree and SOW will not pose an unreasonable risk of injury to health or the environment.	
TSCA Regulations (Decontamination)	40 CFR 761.79	See Item A above.	See Item A above.	Will be attained.	
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained by implementing sedimentation and erosion controls and stormwater management measures.	

#### Action-Specific ARARs

E. Sediment Removal from Unkamet Brook and Sediment and Bank Soil Removal at Silver Lake (including dewatering prior to disposition in consolidation areas) (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs (cont'd)				
RCRA Regulations (Identification and Listing of Hazardous Wastes; Toxicity Characteristics)	40 CFR 261.24	See Item B above.	See Item B above.	Will be attained. Soils to be excavated will be evaluated first using a conservative screening tool (dividing the total soil sample results by 20 and changing the reporting units from mg/kg to micrograms per liter) and comparing the results to allowable concentration limits associated with the TCLP. If exceedances appear to result from this exercise, TCLP testing will be used to determine whether soils are characteristic hazardous waste. Soils that exceed allowable concentrations will either be placed in the Building 71 Consolidation Area or sent offsite to a RCRA Subtitle C disposal facility, as needed. Soils that are determined to be below allowable concentrations and therefore nonhazardous, either through the screening tool or TCLP testing, will either be placed in the Hill 78 or Building 71 Consolidation Areas or sent off-site to an appropriate facility.

#### Action-Specific ARARs

E. Sediment Removal from Unkamet Brook and Sediment and Bank Soil Removal at Silver Lake (including dewatering prior to disposition in consolidation areas) (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
State ARARs				
Mass. Air Pollution Control Requirements	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing of dust control measures and air monitoring to meet these requirements.

# Action-Specific ARARs

### F. Capping/Restoration of Inundated Wetlands near Unkamet Brook and Capping of Silver Lake Sediments

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs				
TSCA Regulations (PCB Remediation Waste)	40 CFR 761.61	See Item B above.	See Item B above.	Will be attained. EPA has determined that Removal Actions, including capping/restoration of inundated wetlands and Silver Lake, conducted in accordance with Consent Decree and SOW will not pose an unreasonable risk of injury to health or the environment.
TSCA Regulations (Decontamination)	40 CFR 761.79	See Item A above.	See Item A above.	Will be attained.
Clean Water Act NPDES Regulations (Stormwater Discharges)	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained based on implementation of erosion and sedimentation controls and stormwater management measures.
State ARARs				
Mass. Air Pollution Control Requirements	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing dust control measures and air monitoring to meet these requirements.

### **Action-Specific ARARs**

### G. Natural Resource Restoration/Enhancement Activities

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment		
Federal ARARs	Federal ARARs					
Clean Water Act NPDES Regulations (Stormwater Discharges)  State ARARs	40 CFR 122.26(c)(ii)(C) 40 CFR 122.44(k) 40 CFR 125.100104	See Item A above.	See Item A above.	Will be attained based on implementation of erosion controls and stormwater management measures.		
Mass. Air Pollution Control Requirements	310 CMR 7.09	See Item A above.	See Item A above.	Will be attained by implementing of dust control measures and air monitoring to meet these requirements.		

# Action-Specific ARARs

### H. Temporary On-Site Storage of Free Product, Drums, and Equipment That Will be Disposed of Off-Site

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs				
TSCA Regulations (Storage for Disposal)	40 CFR 761.65 40 CFR 761.61	Various requirements for long term PCB-storage facilities, including requirements for roof, flooring, curbing, and location outside 100-year floodplain. Also, lesser requirements for storage of PCB items for up to 30 days, including inspections, marking, and use of prescribed containers.  Alternatively, parties may obtain risk-based approval from EPA to store PCB-remediation waste if they demonstrate that storage plan will not pose an unreasonable risk to health or the environment.	Applicable to storage of PCB items with PCB concentrations ≥ 50 ppm that GE must dispose of off-site.	Will be attained. Free product and liquids will be temporarily stored in tanks at GE's existing on-plant tank system or in containers at GE's existing on-plant hazardous waste storage facility. Drums and other equipment will temporarily stored in containers at GE's existing on-plant hazardous waste storage facility. Both the tank system and the hazardous waste storage facility meet the long-term PCB storage requirements under TSCA.
TSCA Regulations (PCB Marking Requirements)	40 CFR 761.40	See Item A above.	See Item A above.	Will be attained by marking PCB items subject to these requirements.

TABLE 2

### H. Temporary On-Site Storage of Free Product, Drums, and Equipment That Will be Disposed of Off-Site (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
Federal ARARs (cont'd)				
RCRA Hazardous Waste Regulations (Storage of Hazardous Waste)	40 CFR Part 264, Subparts I and J 40 CFR 262.34(a)	Subparts I and J of Part 264 identify design, operating, monitoring, closure, and post-closure care requirements for long-term storage of RCRA hazardous waste in containers and tank systems, respectively. However, 262.34(a) allows accumulation of RCRA hazardous wastes for up to 90 days in containers or tanks provided generator complies with requirements of Subparts I and J of Part 265 for containers and tanks.	Relevant and appropriate to onsite storage of the above-referenced materials that constitute RCRA hazardous waste in containers and tanks prior to off-site shipment for disposal.	Will be attained. Free product and liquids will be temporarily stored in tanks at GE's on-plant tank system or in containers at GE's existing onplant hazardous waste storage facility. Drums and equipment will be temporarily stored in containers at GE's existing on-plant hazardous waste storage facility. Storage of materials in tanks will be limited to 90 days or less and will meet the substantive requirements for up to 90-day accumulation in tanks. Materials in containers will be stored at GE's existing hazardous waste storage facility, which meets requirements for long-term storage of hazardous waste in containers.
RCRA Hazardous Waste Management/Disposal Facilities Regulations (Preparedness and Prevention)	40 CFR Part 264, Subpart C	Various requirements for design and operation of a hazardous waste facility to minimize possibility of fire, explosion, or sudden release.	Relevant and appropriate.	Will be attained. GE's existing on- plant hazardous waste storage facility meets these requirements.

# Action-Specific ARARs

### H. Temporary On-Site Storage of Free Product, Drums, and Equipment That Will be Disposed of Off-Site (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment	
Federal ARARs (cont'd)					
RCRA for Hazardous Waste Management/ Disposal Facilities Regulations (General)	40 CFR 264.1319	Various requirements relating to waste analysis, security, inspections, personnel training, precautions to prevent accidental ignition or reaction of wastes, location standards, and construction quality assurance program.	Relevant and appropriate.	Will be attained. Operation of GE's existing on-plant hazardous waste storage facility meets these requirements.	
RCRA for Hazardous Waste Management/ Disposal Facilities Regulations (Closure)	40 CFR 264.111115	Standards for closure of hazardous waste storage facilities.	Relevant and appropriate for closure of on-site storage areas.	Will be attained. Upon termination of operations, GE's existing onplant tank system and hazardous waste storage facility will be closed in accordance with the substantive requirements of these regulations.	

TABLE 2

### H. Temporary On-Site Storage of Free Product, Drums, and Equipment That Will be Disposed of Off-Site (cont'd)

Regulation	Citation	Requirements	Applicability/Appropriateness	Determination Re Attainment
State ARARs				
Mass. Hazardous Waste Regulations (Storage of Hazardous Waste)	310 CMR 30.680, 30.690 310 CMR 30.340	30.680 and 30.690 identify requirements for long-term storage of RCRA hazardous waste in containers and tank systems, respectively, that are similar to federal RCRA storage requirements identified above. 30.340 allows on-site accumulation of hazardous waste for up to 90 days and is also similar to federal RCRA storage requirements identified above.	Relevant and appropriate to accumulation and storage of Mass. hazardous waste other than PCBs (e.g., waste oils).	See discussion of federal RCRA Hazardous Waste Regulations (Storage of Hazardous Waste) above.
Mass. Hazardous Waste Regulations (Closure)	310 CMR 30.580	Standards for closure of hazardous waste storage facilities.	Relevant and appropriate to closure of on-site storage areas.	See discussion of federal RCRA Hazardous Waste Regulations (Closure) above.

# Action-Specific ARARs

### I. Permanent Consolidation of Non-TSCA Non-RCRA Soils at Hill 78 Consolidation Area

Regulation	Citation	Requirements	Applicability/Appropriateness	<b>Determination Re Attainment</b>	
ARARs shall be as set forth in Table 1 of Detailed Work Plan for On-Plant Consolidation Areas, included in Annex 1 to SOW.					

### **Action-Specific ARARs**

J. Permanent Consolidation of Other Soils/Sediments at Building 71 Consolidation Area and at New York Avenue/Merrill Road Consolidation Area (if constructed)

Regulation	Citation	Requirements	Applicability/Appropriateness	<b>Determination Re Attainment</b>
ARARs shall be as set forth in	Table 2 of Detailed Work Pla	an for On-Plant Consolidation Areas	s, included in Annex 1 to SOW.	

# Action-Specific ARARs

# K. Other

Regulation	Citation	Criterion/Standard	Applicability/Appropriateness	Proposal Regarding Attainment
Federal ARARs				
TSCA PCB Spill Cleanup Policy	40 CFR 761, Subpart G	Policy used to determine adequacy of cleanup of spills resulting from the release of materials containing PCBs at concentration of 50 ppm or greater.	TBC for PCB spills or leakage from cleanup.	GE will consider and address cleanup policy for any new PCB spills that occur during the work.

# **Location-Specific ARARs**

### A. Rivers, Streams, and Lakes

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Federal ARARs				
Fish & Wildlife Coordination Act Requirements	16 USC 661 et seq. 40 CFR 6.302(g)	Requires development of measures to prevent, mitigate, and compensate for loss of fish and wildlife resources to the maximum extent possible.	Relevant and appropriate.	Will be attained by conducting work in waterways using approaches that will include precautions against erosion of bank soils and by restoring aquatic habitat.

# **Location-Specific ARARs**

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Federal ARARs (cont'd)				

TABLE 3

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Clean Water Act § 404 Requirements	33 USC 1344 33 CFR Parts 320-323 40 CFR 230	For discharge of dredged or fill material into water bodies or wetlands, there must be no practical alternative with less adverse impact on aquatic ecosystem; discharge cannot cause or contribute to violation of state water quality standard or toxic effluent standard or jeopardize threatened or endangered (T&E) species; discharge cannot significantly degrade waters of U.S.; must take practicable steps to minimize and mitigate adverse impacts; must evaluate impacts on flood level, flood velocity, and flood storage capacity.	Applicable to discharge of dredged or fill material to waters of U.S.	Will be attained in part because (a) there is no practical alternative with less adverse impact; (b) all practical measures will be taken to minimize and mitigate any adverse impacts from the work; (c) current information indicates no likely impact on T&E species; (d) there will be no significant net loss of flood storage capacity, and no significant net increase in flood stage or velocities; and (e) banks will be restored and habitat will be improved. To the extent that discharges occurring during the performance of the Removal Actions may cause or contribute to exceedances of state water quality standards or toxic effluent standards or to degradation of water quality, EPA has determined that it is not practicable to avoid such temporary impacts while work is being conducted. Further, if T&E species are identified and jeopardized, it may not be practicable to comply with this ARAR in the Removal Actions due to the exigencies of the situation.

TABLE 3

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
State ARARs				
Mass. Clean Water Act Water Quality Certification Regulations	314 CMR 9.06	For discharge of dredged or fill material, there must be no practicable alternative with less adverse impact on aquatic ecosystem; must take practicable steps to minimize adverse impacts on wetlands or land under water; stormwater discharges must be controlled with BMPs; must be no substantial adverse impact to physical, chemical, or biological integrity of surface waters.	Applicable to dredging of waters of U.S. within Mass.	Will be attained because (a) there is no practicable alternative with less adverse impact on the aquatic ecosystem; (b) all practical measures will be taken to minimize adverse impacts on wetlands and land under water; (c) stormwater discharges will be controlled through BMPs; and (d) there will be no substantial long-term adverse impacts to integrity of waters.
	314 CMR 9.07	Hydraulic or mechanical dredging allowed; must avoid fisheries impacts.	Applicable to dredging of waters of U.S. within Mass.	Will be attained. There are no significant fisheries in area at present and aquatic habitat will be restored.

TABLE 3

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
State ARARs (cont'd)				
Mass. Wetlands Protection Act and Regulations	MGL c. 131 § 40 310 CMR 10.53(3)(q) 310 CMR 10.5458	Actions responding to the release or threat of release of hazardous materials must, to the maximum extent practicable, avoid/minimize hydrological and other adverse impacts; use BMPs to prevent erosion/siltation; implement mitigating measures; provide compensatory storage for lost flood storage capacity; avoid increase in flood stage or velocity; and restore disturbed vegetation. In addition, there must be no practical alternatives to the project consistent with the MCP that would be less damaging to resource areas.	Applicable to response action activities altering or within 100 feet of stream banks or land underlying water bodies or altering floodplain or riverfront area.	Will be attained because (a) there is no practicable alternative that would be less damaging to resource areas; (b) all practical measures will be taken to minimize adverse impacts on wetlands; (c) stormwater discharges will be controlled through BMPs; and (d) actions will be taken to minimize the impact of hydrological changes during the work, to the extent practicable; (e) after completion of the work, there will be no significant net loss of flood storage capacity, no significant net increase in flood storage or velocities, and flood storage compensation will be provided as specified in SOW; and (f) disturbed vegetation will be restored.

TABLE 3

# B. Floodplains, Wetlands, and Banks

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Federal ARARs				
Executive Order for Wetlands Protection	Exec. Order 11990 (1977) 40 CFR 6.302(a) 40 CFR Part 6, App. A	Actions in wetlands must avoid adverse impacts on wetlands where possible, minimize wetland destruction, and preserve wetlands value.	Relevant and appropriate.	Will be attained because there is no practical alternative to work in wetlands with less adverse impact and all practicable measures will be taken to minimize and mitigate any adverse impacts. Erosion and sedimentation control measures will be adopted during removal and restoration activities, and habitat will be restored.
Executive Order for Floodplain Management	Exec. Order 11988 (1977) 40 CFR Part 6 App. A. 40 CFR 6.302(b)	Actions in floodplain must avoid/minimize adverse effects to floodplain and restore/preserve natural values where practicable.	Relevant and appropriate.	Will be attained because there is no practical alternative to work in floodplains with less adverse impact and all practicable measures will be taken to minimize and mitigate any adverse impacts. Erosion and sedimentation control measures will be adopted during removal and restoration activities, habitat will be restored, and flood storage compensation will be provided as specified in SOW.
Clean Water Act § 404 Requirements	33 USC 1344 33 CFR Parts 320-323 40 CFR 230	See discussion of federal Clean Water Act § 404 requirements in Item A above.	See discussion of federal Clean Water Act § 404 requirements in Item A above.	See discussion of federal Clean Water Act § 404 requirements in Item A above.

TABLE 3

# B. Floodplains, Wetlands, and Banks (cont'd)

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
State ARARs				
Mass. Wetlands Protection Act and Regulations	MGL c. 131 § 40 310 CMR 10.53(3)(q) 310 CMR 10.5458	See discussion of Mass. Wetlands Protection Act requirements in Item A above.	See discussion of Mass. Wetlands Protection Act requirements in Item A above.	See discussion of Mass. Wetlands Protection Act requirements in Item A above.
Mass. Clean Water Act - Water Quality Certification Regulations	314 CMR 9.06	See discussion of Mass. Water Quality Certification requirements in Item A above.	See discussion of Mass. Water Quality Certification requirements in Item A above.	See discussion of Mass. Water Quality Certification requirements in Item A above.

TABLE 3

### C. Historic Sites

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Federal ARARs				
National Historic Preservation Act and Regulations	16 USC 470f 36 CFR Part 800	Requires consideration of effect of an undertaking on any site, building, structure or object included in or eligible for inclusion in National Register of Historic Properties.	Relevant and appropriate if historic properties are encountered.	Will be attained because work would not impact any known historic properties included in or eligible for inclusion in the Natural Register.
State ARARs				
Mass. Historical Commission Act and Regulations	MGL c. 9 § 27C 950 CMR 71.07	Adoption of prudent and feasible measures to eliminate, minimize, and mitigate impacts on historic properties.	Relevant and appropriate if historic properties are encountered.	Will be attained because no known historic properties would be impacted by work.

TABLE 3

# D. Critical Habitat for Threatened and Endangered Species

Regulation	Citation	Requirements	Applicability/ Appropriateness	Proposal Regarding Attainment
Federal ARARs				
Endangered Species Act	16 USC 1536 33 CFR 320.3(i) 40 CFR 6.302(h) 40 CFR Part 230, Subpart D 50 CFR Part 402	Where practical, take action to preserve threatened and endangered (T&E) species and critical habitats.	Applicable to Agency- authorized actions that jeopardize the continued existence of a threatened and endangered species or may result in adverse modification to critical habitat.	For areas where habitat assessment has been completed, assessment indicates that work is highly unlikely to impact T&E species and their habitat. If assessment of other areas indicates impacts on T&E species or critical habitat, GE will evaluate whether practical action can be taken to preserve such species/habitat. However, it may not be practicable to comply with this ARAR in these Removal Actions given the exigencies of the situation.



# **PROJECT OPERATIONS PLAN**

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#### **PROJECT OPERATIONS PLAN**

#### 1.0 Introduction and Purpose

GE shall prepare a Project Operations Plan to support the performance of Removal Design/Removal Action activities (RD/RA) for the Removal Actions Outside the River, including pre-design activities (i.e., field sampling) and the subsequent performance of response actions. Included in this Project Operations Plan (POP) are several activities that are common to the response actions anticipated for each Removal Action, and which are addressed in the following plans:

- C Field Sampling Plan (FSP)/Quality Assurance Project Plan (QAPP);
- C Health & Safety Plan (HASP);
- Construction Quality Assurance Plan;
- Contingency Plan and Emergency Procedures;
- C Air Monitoring Plan
- C Site Management Plan;
- C Waste Characterization Plan; and
- C Soil Cover/Backfill Characterization Plan.

Adherence to the procedures and protocols presented in the above plans will provide a level of consistency and comparability for the various Removal Actions, and will also establish minimum requirements concerning analytical and construction quality assurance; site management and security; and health and safety.

Initially, the POP will focus on activities related to additional pre-design activities (e.g., field sampling). As RD/RA activities proceed, existing components of the POP will be updated as needed, while additional plans related to implementation of the response action will be added (e.g., a Construction Quality Assurance Plan).

The contents of this POP are subject to modification or adjustment based on specific RD/RA activities for a given Removal Action, and any site- or activity-specific considerations. If deviations to the contents of this POP are identified for a specific Removal Action, such modifications shall be presented in the technical RD/RA documentation specific to that Removal Action.

#### **PROJECT OPERATIONS PLAN**

#### 2.0 Field Sampling Plan/Quality Assurance Project Plan

GE currently has an existing SAP/DCAQAP (May 1994) which has been approved by EPA and MDEP. A revision to the 1994 SAP/DCAQAP was submitted to the Agencies in October 1998. The Agencies provided comments via letter dated December 21, 1998. GE is currently preparing further revisions to incorporate the Agencies December 21, 1998 comments. That document will serve as the basis for the FSP and QAPP for future RD/RA activities.

The FSP/QAPP identifies the various procedures, protocols, and methodologies to be used by GE during the performance of environmental investigations associated with RD/RA activities. Given the number of Removal Action Areas (RAAs) that are subject to investigation, the status of completed or ongoing activities at each RAA, and the various site-specific characteristics, specific details of each of the activities involved in the RD/RA process cannot be addressed in the FSP/QAPP. As a result, the FSP/QAPP will focus on the general requirements of the environmental investigations, including sampling and field procedures for each media, laboratory analytical methods, handling and documentation procedures, and quality assurance/quality control (QA/QC) procedures. Details concerning the scope of a particular sampling activity (e.g., specific objectives, type, location, rationale, quantity, frequency, depths, constituents to be analyzed for, etc.) will be identified in the specific RD/RA submittals prepared for each Removal Action, with references provided (as appropriate) to the FSP/QAPP. The procedures presented in the FSP/QAPP, particularly as they relate to field investigation protocols, are intended to be general guidelines and are subject to certain modification if deemed appropriate or necessary based on site-specific considerations. If additional information relevant to this document is received (e.g., updates to analytical methodologies), the FSP/QAPP will be modified. All proposed modifications shall be approved by EPA.

The FSP/QAPP also presents the QA/QC procedures to be utilized during the implementation response actions at each RAA. The QA/QC requirements presented in the FSP/QAPP shall include, without limitation, the following:

C Sample Container and Preservation Requirements;

#### **PROJECT OPERATIONS PLAN**

- C Sample Holding Time Criteria;
- C Analytical Method Requirements;
- C Quality Control Sample Collection Frequency;
- C Laboratory Reporting Limits;
- C Control Limits for QA/QC Sample Analyses;
- C Laboratory Reporting Requirements;
- C Data Validation Procedures;
- C Field and Laboratory Audit Procedures;
- C Corrective Action Procedures; and
- C Preventative Maintenance Procedures.

In addition to the QA/QC requirements, the FSP/QAPP also contains standard operating procedures (SOPs) for the development of data quality objectives (DQOs), the collection of environmental samples, chain-of-custody documentation, field screening activities, ambient air monitoring, field equipment decontamination, and data validation.

### 3.0 Health and Safety Plan

Currently, a General Facility Health and Safety Plan (HASP, June 1993) is used by GE to establish minimum health and safety requirements and procedures for all environmental activities conducted within the Pittsfield/Housatonic Site. The following health and safety components are addressed in the existing HASP:

- C Introduction/General Site Background;
- C Project Health and Safety Management;
- C Site Evaluation and Control;
- C Site-Specific and Task-Specific Safety and Health Risk Analysis;
- C Employee Information and Training;
- C Personal Protective Equipment Requirements;
- C Site Monitoring [will reference Air Monitoring Plan and FSP/QAPP];

#### **PROJECT OPERATIONS PLAN**

- C Medical Surveillance;
- Cleaning Procedures [will reference applicable sections of FSP/QAPP];
- C Emergency Procedures;
- C Engineering Controls and Work Practices;
- C Site Control [will reference Site Management Plan];
- C Record keeping; and
- C Hazard Communication.

As part of its inclusion in the POP, this existing plan will be reviewed and updated/modified as necessary to expand the tasks addressed in the plan, and to incorporate any regulatory or scientific updates since 1993.

There are several limitations associated with the preparation of a single health and safety plan which is applicable to multiple contractors performing various tasks. For this reason, the updated HASP included in the POP shall contain the minimum health and safety standards and procedures applicable to all parties involved. Each contractor retained by GE shall supplement the information presented in the HASP with a contractor-specific HASP. This includes contractors that perform surveying, drilling, engineering or consulting services, and who enter contaminated portions of the RAAs. The contractor-specific HASP(s) will consider not only the general information and minimum requirements contained in HASP, but also the specific information related to the particular work area and task(s) to be performed by the contractor.

The United States and the States of Massachusetts and Connecticut agree that their representatives, agents, contractors, subcontractors, and employees shall use reasonable efforts to comply with all reasonable safety rules enforced by GE on a non-discriminatory basis against all GE employees and non-GE employees visiting the GE Plant Area, including the use of protective clothing appropriate for site conditions. However, if GE requires the use of non-standard personal protective equipment for entry to a particular portion of the GE Plant Area, and if the governmental representatives do not have such equipment and GE is unable to supply the required non-standard equipment upon request, then GE shall not deny access to such portion of the GE Plant Area. Furthermore, nothing in this paragraph shall be construed to be a waiver of the United States' right, or the rights of Massachusetts and Connecticut, to access the GE Plant Area in accordance with federal and state laws and regulations.

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### 4.0 Construction Quality Assurance Plan

A Construction Quality Assurance Plan (CQAP) shall be prepared to provide quality assurance (QA) guidance for site-specific construction projects at each RAA. The purpose of the CQAP is to make sure that, with reasonable certainty, a completed response action meets or exceeds all design criteria, plans, and specifications. As necessary, an addendum to the general CQAP will be prepared to address Removal Action -specific QA information.

Elements to be included are as follows:

- C The responsibility and authority of organizations and key personnel involved in the design and construction of the site response;
- C The qualifications of the key quality assurance personnel and their designated responsibilities;
- C A detailed description of all CQA activities that will be used to manage construction quality;
- A description of the inspection and testing activities that will be used to monitor and control construction quality;
- C The QA/QC sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for implementing corrective measures;
- Specific sampling protocols, general sampling and analysis requirements, and health and safety requirements to be implemented under this plan will be referenced to the appropriate GE FSP/QAPP, and HASP; and
- Reporting requirements for CQA activities will be outlined. Reporting may include: daily reports, weekly reports, data submissions, inspection data sheets, problem identification and corrective measures reports,

**PROJECT OPERATIONS PLAN** 

and final documentation reports.

Where site-specific QA design specifications have been prepared as part of the design documents, these will be

used to comply with CQAP.

**5.0** Contingency Plan and Emergency Procedures

A Contingency Plan shall be designed to minimize potential risks or hazards to human health or the environment

from any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air,

soil, or surface water from any of the RAAs or other emergencies (e.g., fire and explosions).

This plan will include a list of all emergency equipment that will be available at each RAA, including fire

extinguishing equipment, spill control equipment, communications and alarm systems (internal and external) and

decontamination equipment. The Contingency Plan will be amended whenever: 1) there are changes in design,

response construction activities, operation or maintenance, or other conditions occur which could materially

increase the potential for releases of hazardous waste or hazardous waste constituents; 2) the plan fails in an

emergency; 3) the list of emergency coordinators changes; or 4) the list of emergency equipment changes.

The plan will also provide contingency measures for potential spills and discharges from materials handling and/or

transportation. It will describe the means, methods and facilities required to prevent contamination of soil, water,

air, uncontaminated structures, equipment or material from the discharge of wastes due to spills; provides for

equipment and personnel to perform emergency measures required to contain any spillage and to remove and

properly dispose of any media that become contaminated due to spillage; and provides for equipment and

personnel to perform decontamination measures that may be required to remove spillage from previously

uncontaminated structures, equipment, or material.

As necessary, specific contingency plans will be developed for each Removal Action that will address site- and

activity-specific considerations. The plan will provide the names, addresses and phone numbers (office and

home) of all personnel designated as emergency coordinators, and this list will be updated regularly. Where two

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#### **PROJECT OPERATIONS PLAN**

or more people are listed, one will be named as the primary emergency coordinator.

The plan will also describe the organization and any agreements regarding course of action among emergency agencies, including police departments, fire departments, state and federal emergency response teams, hospitals and contractors.

#### 6.0 Air Monitoring Plan

During the performance of response activities that could potentially produce dust, an air monitoring program for particulates will be conducted to assess potential impacts to ambient air and the need for dust control measures. Such a particulate monitoring program will be in addition to any other monitoring performed by the on-site contractors as part of their overall health and safety monitoring. Such monitoring will be conducted at stations located in a generally symmetrical pattern around the perimeter of the activity. The specific locations for these stations will be evaluated and proposed within the technical RD/RA deliverables for each RAA, and will be based on the location and nature of the site activities, predominant wind direction, location of potential receptors, site accessibility, site security, and existing ambient air monitoring data.

Particulate monitoring will involve daily real-time monitoring performed using a MIE dataRAM Model pDR-1000. The dataRAM uses a passive sampling technique and light scattering photometer to determine particulate concentrations. For each day of monitoring and at regular intervals during each day, the particulate data from the downwind monitor will be compared with the data from the background (upwind) monitor and compared to specific action levels to be identified in the technical RD/RA deliverables for each RAA. In the event that air monitoring action levels are exceeded or if readings indicate a significant increase in upwind/downwind readings, or visible dust related to site operations is observed, dust control measures will be implemented. Such measures may include water spray, modification of work procedures, and/or suspension of work. If such measures do not result in reductions to below the action levels, work will be stopped pending further evaluation of work practices, potential upwind particulate sources, and additional control measures. Also, certain other site controls and practices will be implemented to limit the potential for and amount of dust generation. These include covering exposed soil areas when not in active use, covering soil stockpiles, reducing vehicle speeds, and utilizing

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water sprays as necessary (e.g. in roads, work areas, etc.).

In addition to the above, GE may also propose to conduct ambient air monitoring for PCBs during the

performance of response activities. If such monitoring is performed, the technical RD/RA deliverables for that

RAA will include a plan (for EPA review and approval) specifying monitoring locations, protocols, frequency,

etc.

7.0 Site Management Plan

A Site Management Plan will be prepared to provide guidance and procedures to prevent the public from having

access to potential site safety hazards and to prevent the theft of or damage to facilities or equipment. A master

Site Management Plan will be prepared for the RAAs controlled by GE and also for RAAs not controlled by GE.

For those RAAs with existing site security measures (e.g., RAAs at the GE Plant Area), such measures will be

used or amended as necessary to comply with this POP. Given the number of RAA that are subject to

investigation, the status of completed or ongoing activities at each RAA, and the various site-specific

characteristics, site management plan details will be developed as part of Removal Action-specific RD/RA

documentation.

The plan will describe security operations intended to prevent physical contact with hazardous waste or

hazardous materials, structures, or equipment within designated portions of the site.

The plan will also provide for:

C Secure waste disposal practices;

• Use of artificial or natural barriers which surrounds the designated portions of the site;

A means to control entry, through gates or other entrances to the designated portions of the site; and

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 Posting of designated areas with signs with legends such as "Danger -- Unauthorized Personnel Keep Out."

#### 8.0 Waste Characterization Plan

GE shall prepare a Waste Characterization Plan that describes the procedures to be used to manage and handle all waste to be disposed of either in the on-plant consolidation areas or at off-site facilities. This plan shall include at a minimum:

- C Specific procedures to determine which waste can be disposed of at the Hill 78 Consolidation Area;
- C Disposal requirements for building debris;
- C A description of materials that are excluded from the on-plant consolidation areas; and
- C Management procedures to ensure proper disposal of waste.

#### 9.0 Soil Cover/Backfill Characterization Plan

GE shall propose a Soil Cover/Backfill Characterization Plan that described the procedures to be used to ensure the use of acceptable soil cover and backfill at the various RAAs. This plan shall include at a minimum:

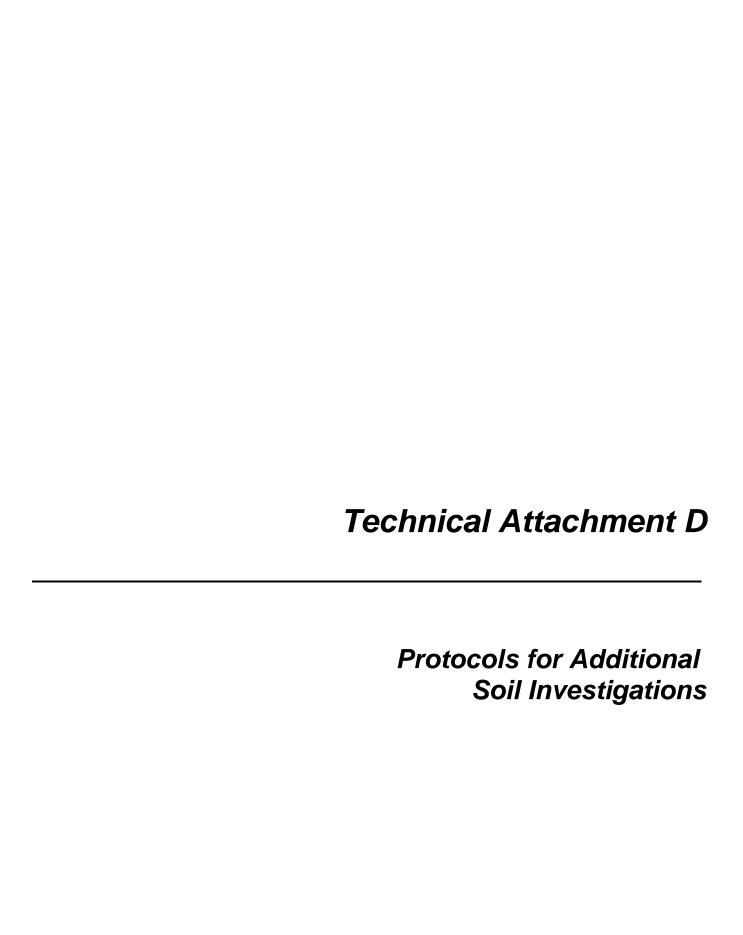
- C Sampling procedures and frequencies and analytes for the source material to be used;
- C Sampling and analysis QA/QC procedures; and
- C Appropriate analyte screening levels for selecting/rejecting source material.

### 10.0 General Procedures

GE shall submit the FSP/QAPP components of the POP to EPA within three months of lodging of the Consent Decree, and shall submit the remaining components of the POP to EPA within two months of entry of the Consent Decree, as provided in Attachment A. All components of the POP will be subject to EPA review and approval, except for the General Facility HASP, which will be submitted to EPA solely for review. The

# **PROJECT OPERATIONS PLAN**

contractor-specific HASPs shall be submitted to EPA for review prior to commencement of on-site activities. GE shall review all components of the POP annually and submit any proposed modifications to EPA for approval.



# PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

1.0	Intro	duction and Purpose
2.0	Gene	ral Approach 1
	2.1	GE Plant Area
		2.1.1 Unpaved Areas
		2.1.2 Paved Areas 5
	2.2	Former Oxbow Areas 5
		2.2.1 Commercial and Recreational Areas
		2.2.2 Residential Areas
	2.3	Other Areas

#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

#### 1.0 Introduction and Purpose

This attachment sets forth the general approach that GE shall use to identify and conduct additional soil investigations at each Removal Action Area (RAA) as part of the RD/RA process for the Removal Actions Outside the River. The purpose of these investigations is to expand the existing data sets associated with each of the various RAAs, as needed, to fulfill data needs related to soil characterization.

The extent of supplemental soil investigations will be dependent upon the available data and the Performance Standards established for each Removal Action. Specific proposals for additional soil investigations will be presented in the Pre-Design Work Plan developed for each Removal Action. The sampling methods and procedures associated with these investigations will be consistent with the Project Operations Plan referenced in Attachment C of this SOW. (This attachment does not apply to the Allendale School Property or to the Hill 78 and Building 71 Consolidation Areas, because GE has already proposed and, with EPA approval, conducted the necessary additional soil sampling at those RAAs to design the Removal Actions for those RAAs.)

#### 2.0 General Approach

Specific soil sampling approaches and protocols shall be developed for each RAA and presented in the relevant Pre-Design Work Plan. The general approach for performing additional soil investigations are outlined below for the following groupings of RAAs:

- C GE Plant Area;
- C Former Oxbow Areas;
- C Housatonic River Floodplain; and
- C Silver Lake Area.

#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

#### 2.1 GE Plant Area

Additional soil investigations shall be conducted in the future at the following RAAs within the GE Plant Area:

- C 20s Complex;
- C 30s Complex;
- C 40s Complex;
- C East Street Area 2 South;
- C East Street Area 2 North;
- C East Street Area 1:
- C Hill 78 Area Remainder; and
- C Unkamet Brook Area.

The general approach for performing the additional soil investigations at the above RAAs will include the application of grid-based data collection and evaluation (except for the Hill 78 and Building 71 Consolidation Areas, where, as noted above, the necessary additional sampling has already been completed with EPA approval). Separate approaches will be used for unpaved and paved areas as outlined below.

## 2.1.1 Unpaved Areas

There are approximately 100 acres of unpaved areas within the GE Plant Area RAAs. For these areas, additional soil investigations will be performed in a grid-based sampling pattern (excluding the On-Plant Consolidation Areas, as noted above, and the unpaved portion of the former Unkamet Brook interior landfill). At industrial/commercial areas within the GE Plant Area, as specified in the SOW (refer to Figures 2-1 through 2-3 of SOW for illustration), such sampling will be conducted on an approximate 100-foot grid system established for each RAA. At recreational areas within the GE Plant Area, as specified in the SOW (refer to Figures 2-1 through 2-3 of SOW for illustration), such sampling will be conducted on an approximate 50-foot grid pattern for surface soil samples (from the 0- to 1-foot depth increment) and on an approximate 100-foot grid pattern for subsurface soil samples.

#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

Sampling locations and depths will be selected based on the availability of acceptable data from historical sample locations for each Removal Action. The Pre-Design Work Plans for each of the various Removal Actions will include a summary and assessment of the available data sets and propose the additional sampling and analysis activities, with supporting rationale.

Existing data for each RAA will be reviewed/evaluated to establish areas/grid nodes that have already been adequately located and have acceptable analytical data. Existing sample locations will be correlated to the nearest grid node. Borings associated with a grid node will be evaluated to ascertain the depth(s) for which sample data exist. Typically, historical sampling performed at the various GE Plant Areas has included continuous 2-foot interval sampling and analysis for PCBs, with select samples also being analyzed for Appendix IX+3 constituents (often excluding pesticides and herbicides). An adequately characterized grid node will generally have PCB samples collected from all or portions of each of the area-specific depth intervals (defined below), and at least one sample analyzed for such Appendix IX+3 constituents. If acceptable PCB analytical data exist for a particular grid node which correspond directly with the area-specific depth intervals (defined below), then such data will satisfy PCB characterization requirements at that grid node. If continuous 2-foot depth interval PCB data are available for a particular grid node, such values will be used to compute depth-weighted average PCB concentrations corresponding with the area-specific depth intervals (defined below). Finally, if discontinuous depth interval PCB data are available for a particular grid node, such data shall be used only to the extent representative depth-weighted average PCB concentrations can be calculated as indicated above. To the extent this is not possible at such grid nodes, additional samples shall be collected and analyzed.

As for the characterization of Appendix IX+3 constituents in soil, the historical data set for the GE Plant Area typically includes Appendix IX+3 data for one 2-foot depth interval sample per boring, where such analyses were performed. For grid nodes where such data are available, these data will be utilized to satisfy Appendix IX+3 constituent characterization corresponding to the area-specific depth intervals (defined below). For instance, as defined below, the area-specific depth intervals include the 1- to 6-foot depth interval; if Appendix IX+3 data are available for the 2- to 4-foot depth interval, for example, for a particular grid node, these data will be used to characterize the overall 1- to 6-foot interval at this location. Existing data identified to be used to satisfy soil characterization at a particular grid node, will only be used if such data have been reviewed for quality

#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

assurance/quality control and have been found to be of adequate quality for usage. Also, non-detect values included as part of characterization data sets shall be accounted for as one-half the associated laboratory detection limits.

Where sampling is to be performed at selected grid nodes, samples will be collected for PCB analysis from the depth intervals necessary to apply the Performance Standards for PCBs, as set forth in the SOW. At industrial/commercial areas, such samples will be collected from the 0- to 1-foot, 1- to 6-foot, and 6- to 15-foot depth increments. At recreational areas, such samples will be collected from the 0- to 1-foot, 1- to 3-foot, 3- to 6-foot, and 6- to 15-foot depth increments. Sample collection shall comply with procedures to be presented in the Field Sampling Plan and Quality Assurance Project Plan (refer to Attachment C of this SOW).

In addition to PCB sampling and analysis, select soil samples will be collected for analysis of other Appendix IX+3 constituents (with the possible exclusion of some constituents, if proposed to and approved by EPA). The scope of such sampling within the GE Plant Area will be presented in the specific RD/RA submittals developed for each Removal Action and will consider the available information, as discussed above. This information will be considered in developing a sampling plan for Appendix IX+3 constituents. The general criteria for the scope of such a plan are as follows:

- C The number of Appendix IX+3 analyses will be approximately one-third the number of PCB sample results;
- C To the extent practicable, the Appendix IX+3 sample analyses will be approximately evenly distributed between surface soil samples (from the top foot of soil) and subsurface soils samples (from the various deeper intervals); and
- The actual selection of sample locations and depth will be based on the spatial distribution of the available data. In addition, field observations at the time of sampling will also be considered -- e.g., photoionization detector (PID) readings, evidence of staining, and prior knowledge of data gaps within and surrounding a particular grid node).

#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

In areas where further soil characterization is necessary and poor sample recovery is encountered, several boring attempts shall be made, to the extent practicable, to recover sufficient representative samples proximate to the associated grid nodes. For any sample locations in which NAPL is encountered as part of these soil characterization activities the need for a new monitoring well shall be assessed, with the results presented to the EPA for review and approval.

#### 2.1.2 Paved Areas

There are approximately 110 acres of paved area (excluding buildings) within the GE Plant Area. For these areas (excluding the paved portion of the former interior landfill at the Unkamet Brook Area), additional soil investigations will be performed by installing new soil borings at a total of approximately 170 locations. These investigations will be focused primarily in areas where current data are limited. The specific sampling locations and depths will be proposed in the Pre-Design Work Plan for each Removal Action. These activities will be generally consistent with those outlined above for unpaved areas.

#### 2.2 Former Oxbow Areas

As outlined previously in this SOW, the following RAAs comprise the Former Oxbow Areas:

- C Newell Street Area I;
- C Newell Street Area II;
- C Lyman Street Area;
- C Former Oxbow Areas A and C; and
- C Former Oxbow Areas J and K.

The general approach for performing the additional soil investigations at the Former Oxbow Areas will also include the application of grid-based data collection and evaluation. Separate approaches will be used for commercial and recreational areas and residential areas as outlined below.

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#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

#### 2.2.1 Commercial and Recreational Areas

Approximately 41 properties (approximately 56 acres in total) comprise the commercial and recreational areas of the Former Oxbow Areas (refer to Figure 2-4 and 2-5 of the SOW). For these properties (excluding the GEowned Newell Street and Lyman Street parking lots), soil sampling will be performed as part of a grid-based program. These activities will be generally consistent with those outlined above for the GE Plant Area, except that a 50-foot grid will be used for surface soil (0- to 1-foot depth) and a 100-foot grid will be used for subsurface soils. For subsurface soils, samples will be collected at depth intervals of 1 to 3 feet, 3 to 6 feet, 6 to 10 feet, and 10 to 15 feet below ground surface. The specific sampling locations (and supporting rationale) will be proposed in the Pre-Design Work Plan for each Removal Action. If an Environmental Restriction and Easement (ERE) is not obtained at a given property, additional grid soil sampling shall be conducted if necessary to design and implement an Conditional Solution for that property, as provided in the CD.

For the GE-owned Newell Street and Lyman Street parking lots, surface soil sampling (at the 0- to 1-foot depth) shall be conducted on an approximate 50-foot grid in those areas where GE elects to propose either of the exceptions set forth in Performance Standard #4 in Section 2.3.2 -- i.e., installation of an engineered barrier over the existing pavement/soil, or achieving specified spatial average PCB concentrations in lieu of installing an engineered barrier. In addition, subsurface soil sampling shall be conducted throughout the parking lots on an approximate 100-foot grid, with soil samples collected from the same subsurface depth intervals specified in the preceding paragraph, to the extent necessary taking into account existing useable data.

All soil samples will be analyzed for PCBs. In addition, some of these soil samples will be analyzed for Appendix IX+3 constituents (with the possible exclusion of some constituents, if proposed to and approved by EPA). The number, locations, and depths of the soil samples selected for Appendix IX+3 analysis will be based on the same criteria specified in Section 2.1.2 above for the GE Plant Area.

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#### PROTOCOLS FOR ADDITIONAL SOIL INVESTIGATIONS

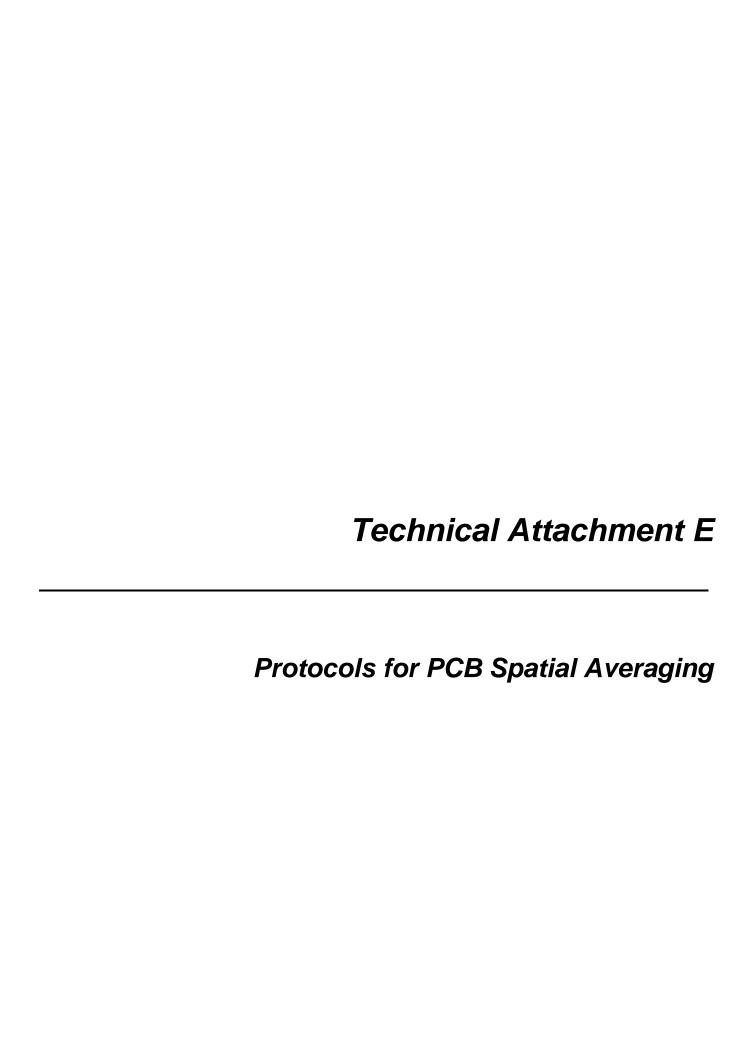
#### 2.2.2 Residential Areas

Approximately 2 residential properties are located within the Former Oxbow Areas (refer to Figure 2-5 of this SOW). For these properties, soil sampling shall be performed as part of a grid-based program consistent with that of the commercial and recreational areas outlined above, except that a 25-foot grid pattern will be used for surface and near-surface soil sampling (i.e., 0- to 0.5 feet and 0.5- 1-foot depth) and a 50-foot grid pattern will be used for characterizing soil at depths greater than 1 foot. Samples will be collected continuously from the ground surface to a depth determined by the extent of any visible fill material or evidence of contamination, or to the water table, whichever occurs deeper. Samples will be collected from the 0- to 0.5-foot, 0.5- to 1-foot depth intervals and from 2-foot intervals thereafter. All samples will be analyzed for PCBs, and a minimum of three samples per property will be selected for Appendix IX+3 analysis based on the highest PID readings.

#### 2.3 Other Areas

For the properties within the Housatonic River floodplain RAAs and for the banks at the Silver Lake Area, the scope of additional soil sampling will be specified in the Pre-Design Work Plans for the Removal Actions in question. Based upon a review and data quality assessment of the existing data, GE will include in those work plans a proposal for additional soil sampling as needed. Such sampling shall be sufficient to characterize the constituents in the floodplain or Silver Lake bank soils, consistent with prior investigations of such areas, and shall be sufficient to support spatial averaging of PCB concentrations and to apply the relevant Performance Standards set forth in the SOW to the soils at these RAAs. Grid sampling techniques consistent with those to be utilized at the GE Plant Area and Former Oxbow Area RAAs will be evaluated and utilized as appropriate.

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# PROTOCOLS FOR PCB SPATIAL AVERAGING

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#### PROTOCOLS FOR PCB SPATIAL AVERAGING

#### 1.0 Introduction and Purpose

This technical attachment describes the general approach that GE shall use to estimate spatial average PCB concentrations in soils and sediments before and after the performance of response activities for several Removal Action Areas (RAAs) subject to Removal Actions Outside the River. For each of these Removal Actions, the CD and SOW establish Performance Standards concerning the presence of PCBs in soils. In general, the scope of response activities to achieve those Performance Standards will be determined based on spatial averaging of PCB concentrations in soils for various depths and areas within each RAA. Such spatial averaging does not apply to certain response actions associated with the Removal Actions Outside the River -- namely, the response actions for the Hill 78 and Building 71 Consolidation Areas, the response actions for the Allendale School Property, and the Silver Lake capping at the Silver Lake Area. For these response actions, the method of determining compliance with the PCB-related Performance Standards involves an alternate method specified elsewhere in the CD and/or SOW. In addition, GE anticipates that spatial averaging approach described herein will be utilized to determine compliance with the PCB-related Performance Standards for the sediments in Unkamet Brook and in the inundated wetland in the Unkamet Brook Area. The use of a spatial averaging approach for sediments is conditioned on the availability of sufficient data to support such an approach, as described further below; if sufficient data are not available, GE shall either collect additional data (to support use of spatial averaging) or utilize an alternate method for applying the pertinent Performance Standards, as also described below.

The RAAs in which spatial averaging of PCB concentrations will be used to determine compliance with the Performance Standards are listed below and are generally depicted on Figures 2-1 through 2-17 of the SOW.

## GE Plant Area (Figures 2-1 through 2-3 of the SOW)

- C 20s Complex
- C 30s Complex
- C 40s Complex
- C East Street Area 2 South
- C East Street Area 2 North

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- C East Street Area 1- North
- C Hill 78 Area Remainder
- C Unkamet Brook Area

## Former Oxbow Areas (Figures 2-4 and 2-5 of the SOW)

- C Former Oxbow Areas A and C
- C Lyman Street Area
- C Newell Street Area II
- C Newell Street Area I
- C Former Oxbow Areas J and K

## Housatonic River Floodplain (Figures 2-7 through 2-24 of the SOW)

- C Floodplain Current Residential Properties Adjacent to 1 ½-Mile Reach Actual/Potential Lawns
- C Floodplain Non-Residential Properties Adjacent to 1 ½-Mile Reach (Excluding Banks)
- C Floodplain Current Residential Properties Downstream of Confluence Actual/Potential Lawns

#### Silver Lake (Figure 2-6 of the SOW)

C Silver Lake - Bank Soils at Adjacent Properties

Within these RAAs, GE shall derive spatial average PCB concentrations for each of the specific areas (averaging areas) and depth increments listed in Table E-1, subject to the conditions described in Section 2.1 of this Attachment. (The averaging areas for the RAAs at the GE Plant Area are also generally depicted on Figure E-1.) These averages will be calculated using historical data available from prior site investigations (to the extent such data are determined to be acceptable based on a data quality assessment), additional data which will be collected by GE as part of the pre-design investigations, and data supplied by the EPA. The spatial average results of this exercise will provide an assessment of the existing average PCB concentration within each area at the specified depth intervals. These averages will also serve as the basis for determining the scope of response actions, and

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the effectiveness of response action in reducing the average PCB concentrations and achieving the applicable Performance Standards. Details regarding the procedures to be used to develop the spatial average PCB concentrations are presented below. Further details regarding the spatial averaging performed for each RAA will be presented in the technical RD/RA deliverables associated with each Removal Action.

#### 2.0 Description of Spatial Averaging Approach

GE shall use a spatial averaging approach to estimate the pre- and post-response action conditions concerning the presence of PCBs in soils (and, where applicable, sediments) for each averaging area listed in Table E-1. This approach was selected based on the Performance Standards established in the CD and SOW (i.e., cleanup levels based on spatial averaging), and its ability to accommodate (from an averaging perspective) the variations in the horizontal and vertical distribution of PCBs in soils and sediments. As described below, the spatial averaging approach to be used involves a three-dimensional characterization of the PCB concentrations in the soils (or sediments) in the averaging area and results in a spatial average concentration that is both area- and volume-weighted.

## 2.1 Spatial Averaging Areas

As noted above, the averaging areas and depth increments for which spatial average PCB concentrations shall be calculated are listed in Table E-1. The averaging areas are further described below.

- For the GE-owned industrial areas within the GE Plant Area, a total of 12 averaging areas for soil have been established (Areas 1, 2, 3, 4A, 4B, 4D, 5, 6, 7, 8, 9C, and 9E, as depicted generally on Figure E-1). These areas have been established based on current uses and conditions associated with each such area. GE shall utilize these designated averaging areas for soils deeper than one foot; and it shall utilize these or alternate averaging areas for the top foot of soil in accordance with the following conditions:
  - a. GE may utilize any of the above-identified averaging areas for the top foot of soil provided that it ensures the removal of all soils in the top foot in unpaved portions of

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such area that contain PCB concentrations in excess of a not-to-exceed (NTE) concentration of 125 ppm; or

- b. GE may establish alternate averaging areas for the top foot of soil if such areas do not exceed 1.0 acre in size (without the need to achieve an NTE concentration); or
- c. GE may propose to EPA for approval the use of any of the above-identified averaging areas or an alternate averaging area for the top foot of soil without the need to achieve the NTE concentration, and may utilize such area upon EPA approval (which may be conditioned on the inclusion in the ERE for such area of additional restrictions on construction).

In addition, in the event that either the predominant use of one or more of the above-identified averaging areas changes or there is some other change at the GE Plant Area that creates a distinct exposure area within an identified averaging area prior to the recordation of an ERE covering such area, the identified averaging areas will be modified as necessary to reflect such change, including the designation of the distinct exposure area as a new averaging area, subject to EPA review and approval.

For the GE-owned non-industrial areas within the GE Plant Area (i.e., the potential future City recreational area in East Street Area 2-South, the 200-foot wide riparian removal zone, and the non-industrial area east of the former Unkamet Brook landfill), each of those areas shall be utilized as a separate averaging area (Areas 4C, 4E, and 9F, as depicted generally on Figure E-1) subject to the conditions in the following paragraph.

For each of the averaging areas at the GE-owned portions of the GE Plant Area, spatial average PCB concentrations shall be calculated for the depth increments listed in Table E-1 and specified in the relevant Performance Standards. For the potential future City recreational area in East Street Area 2-South, a spatial average concentration will be calculated only for the 2-foot depth increment below the one-foot soil cover to be installed; response actions for greater depths shall be determined based on the spatial averaging for the overall averaging area that contains this potential recreational area (the former gas plant/scrap yard averaging area). In addition, for the 200-foot wide riparian removal zone located

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along the north side of the river between the former Thermal Oxidizer location and the downstream edge of the GE Plant Area, the required response actions involve the installation of a one-foot thick vegetative engineered barrier, as described in Section 2.2.2, Performance Standard # 4, with the possible exception that an engineered barrier need not be installed in any discrete portion of the strip where the spatial average PCB concentrations do not exceed 10 ppm in the top foot, 15 ppm in the top three feet, and 100 ppm in the top 15 feet. If this exception is pursued by GE, such areas shall be subject to calculations concerning spatial average PCB concentrations in accordance with the protocols outlined in this Attachment.

- C For the commercial/industrial and recreational areas located within the Unkamet Brook Area that are not owned by GE (Areas 9A, 9B, 9D, 9I, and 9M, as depicted generally on Figure E-1), as well as the non-GE-owned portion of the commercial/industrial property (Parcel K10-14-1) within East Street Area 1-North (Area 6 on Figure E-1), the averaging areas shall be determined in the same way as specified below for commercial/industrial and recreational areas in the Former Oxbow Areas. For each of these averaging areas, spatial average PCB concentrations shall be calculated for the depth increments listed in Table E-1 and specified in the relevant Performance Standards.
- In the Unkamet Brook Area, three averaging areas shall be utilized for the sediments in Unkamet Brook itself (Areas 9J, 9K, and 9L, as depicted generally on Figure E-1) and two averaging areas shall be utilized for the nearby inundated wetlands (one for each wetlands area, depicted generally as Areas 9G and 9H on Figure E-1). For each of these areas, spatial average PCB concentrations shall be calculated for the top foot of sediments, as specified in Table E-1, provided that sufficient PCB data are available. For this purpose, sufficient PCB data shall mean: (a) for each reach of the brook, sampling data located along each reach at an appropriate spacing, with a minimum spacing of 25 feet; and (b) for the inundated wetlands, data from an appropriate sampling grid, with a minimum 25-foot sample grid spacing. If sufficient PCB data are not available to support spatial averaging as defined above, GE shall utilize, for comparison to the applicable Performance Standards, either the maximum detected PCB concentration in the area or the 95% Upper Confidence Limit on the arithmetic mean (95% UCL) of the available PCB data for the area, whichever is lower, provided that GE may use the 95% UCL only upon EPA approval that enough data are available to support such a statistical evaluation.

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- C For the Former Oxbow Areas, averaging areas shall be determined as follows:
  - -- To determine the averaging area for the top foot of soil, GE shall use one of the following options at each individual parcel as defined on city tax maps:
    - a. GE may consider the entire parcel as an averaging area provided that it ensures the removal of all soils in the top foot in unpaved portions of the parcel that contain PCB concentrations in excess of the following NTE concentrations: 125 ppm for a commercial/industrial property, 50 ppm for a recreational property, or 10 ppm for a residential property, and provided that, for a recreational property, exposure is equally likely throughout such property; or
    - GE may establish averaging areas at the property which do not exceed the following sizes: 0.5 acre for a commercial/industrial or recreational property or 0.25 acre for a residential property; or
    - c. GE may propose other specific averaging area(s) for the property to EPA for approval.
  - -- For averaging that includes soils deeper than one foot, the averaging areas shall correspond to the boundaries of each separately owned parcel.

For each averaging area, spatial average PCB concentrations shall be calculated for the depth increments listed in Table E-1 and specified in the relevant Performance Standards.

- For residential and non-residential properties in the Housatonic River floodplain, averaging areas shall be determined as follows:
  - To determine the averaging areas for the top foot of soil, GE shall use one of the following options at each separately owned property:

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- a. GE may consider the entire Actual/Potential Lawn (as defined in the CD) of a recreational property or the entire non-bank portion of a non-residential property -- including (in both cases) both the portion lying within the floodplain and any portion located outside the floodplain -- as an averaging area provided that: (i) residential, recreational, or commercial exposure, as applicable, is equally likely throughout that area (subject to EPA approval); and (ii) GE ensures the removal of all soils in the top foot in unpaved portions of the property that contain PCB concentrations in excess of the following NTE concentrations: 10 ppm for a residential property, 50 ppm for a recreational property, or 125 ppm for a commercial/industrial property; or
- GE may establish averaging areas at the property which do not exceed the following sizes: 0.25 acre for a residential property or 0.5 acre for a recreational or commercial/ industrial property; or
- c. GE may propose other specific averaging area(s) for the property to EPA for approval.
- -- For averaging that includes soils deeper than one foot, the averaging areas shall correspond to the entire Actual/Potential Lawn of a residential property and the entire non-bank portion of a non-residential property, provided that the applicable exposure scenario for such subsurface soils applies with equal likelihood throughout that area (subject to EPA approval).

For each averaging area, spatial average PCB concentrations shall be calculated for the depth increments listed in Table E-1 and specified in the relevant Performance Standards.

C For the Silver Lake Area, averaging areas shall consist of the bank soils at each separately owned residential property to be addressed pursuant to this SOW, the bank soils at each separately owned commercial/industrial property, and five discrete recreational bank areas, as depicted generally on Figure E-2. For each such averaging area, spatial average PCB concentrations shall be calculated for the depth increments listed in Table E-1 and specified in the relevant Performance Standards..

#### PROTOCOLS FOR PCB SPATIAL AVERAGING

#### 2.2 Spatial Averaging Approach

For each soil averaging area described above and each depth increment specified in Table E-1, GE shall initially develop a detailed site plan. Included on the site plan will be information concerning the following:

- C Property/area boundaries;
- C Surface topography;
- C Soil sampling locations within and adjacent to area;
- C Presence of roadways, utilities, easements, etc.;
- C Presence of buildings, pavement, and other permanent structures; and
- C Other significant site features.

Using the site plan, computer-generated drawings will generate Theissen polygon maps for each averaging area at the depth intervals specified in Table E-1. Theissen polygon mapping involves the use of computer software to draw perpendicular bisector lines between adjacent sample locations to create two-dimensional, sample-specific polygon areas. Certain boundary conditions will impact the generation of Theissen polygons, such as the boundaries of the area subject to averaging, presence of paved and unpaved areas, easement boundaries, building footprints, property lines, etc. As appropriate, the computer-generated Theissen polygons will be modified to reflect actual site conditions, presence/absence of soil at a given depth, locations of property ownership lines, or other specific or unique site considerations. Once the Theissen polygon map is complete, all of the soil areas and depths potentially subject to response actions will be adequately characterized for use in subsequent evaluations. After generation of the Theissen polygons, polygon identification numbers will be assigned to each polygon and the surface area of each polygon will be calculated.

The next step in the calculation of spatial average PCB concentrations will involve the development of a computer spreadsheet to combine the results of the Theissen polygon analysis and the laboratory PCB soil data. The computer spreadsheet will combine information obtained from the Theissen polygon mapping (i.e., polygon ID and area for each polygon) with the analytical results of soil sampling to provide a three-dimensional characterization of the soils associated with each polygon. The volume of soil associated with

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each polygon will be based on the area of the polygon multiplied by a soil depth that is either pre-determined

(based on the requirements established in the CD and SOW -- e.g., the 1 to 6-foot depth increment for the

GE Plant Area ) or based on the results of soil investigations. For residential properties subject to spatial

averaging, the depth of soil used in the evaluations will be based on the maximum depth at which PCBs were

detected. With respect to the PCB concentration assigned to a given polygon, a depth-weighted average of

the available sample results will be calculated and applied to the polygon area.

Using the information described above, a spatial average PCB concentration will be derived by first

multiplying the volume of each polygon by its assigned PCB concentration, summing the results of this

calculation for each polygon involved in the evaluation, and then by dividing that sum by the cumulative soil

volume associated with all of the polygons. This procedure yields a spatial average PCB concentration that

incorporates both volume- and area-weighted considerations.

The same general spatial averaging approach described above will be used to estimate the spatial average PCB

concentration for sediments within Unkamet Brook and the inundated wetlands within the Unkamet Brook

Area, provided that sufficient data are available to do so, as described above. If spatial averaging will be used

for these sediments, similar Theissen polygon mapping will be prepared, based primarily on the spatial

distribution of the sediment sampling locations and the location of the banks containing the brook and the

wetlands. In addition, consistent with the CD and SOW, the depth increment subject to spatial averaging

is one foot. Additional development of the spatial average PCB concentration for Unkamet Brook sediments

and inundated wetlands will be contained in the technical RD/RA submittals specific to the Unkamet Brook

Area Removal Action.

3.0 Evaluation of Spatial Average Results

Once a spatial average PCB concentration has been calculated for each area identified in Table E-1 (except as

noted on that table), GE will compare the result to the applicable Performance Standards and determine the need

for response actions involving PCBs in soils (or sediments). If determined to be necessary, the scope of the

response actions will be based on the results of additional spatial averaging calculations as described in Section

4.0 below.

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#### 4.0 Preliminary Identification of Response Activities

For areas where the spatial average PCB concentration exceeds the Performance Standards established in the CD and the SOW, the type of response actions to be performed (e.g., soil removal, installation of a surface cover, etc.) will depend on specific site characteristics as described in the SOW (e.g., presence of pavement, location of floodplain, etc.). If response actions within a given RAA are required (i.e., if a spatial average concentration within an area is greater than the appropriate Performance Standards), RD/RA activities will focus on reducing the spatial average to a concentration that is below the appropriate Performance Standard. Specifically, GE shall identify the specific location(s) and depth(s) subject to response actions and present this information in the technical RD/RA submittal associated with the area in question. In addition, GE shall provide justification for the proposed response actions through a demonstration that post-response actions conditions will achieve the applicable Performance Standards. A summary of the procedures that will be utilized for response activities involving soil excavation and/or the installation of a surface cover, cap, or engineered barrier are described below.

For response actions involving soil excavation and subsequent backfilling, the effectiveness of the response activities will be assessed by: 1) assuming the removal of soils within the subject polygon to the depth selected for evaluation, 2) replacing the excavated soils with backfill material assumed to contain levels of PCBs as determined through sampling of the actual backfill source(s), or if non-detect, at ½ the typical laboratory detection limit of 0.075 ppm (so that a PCB concentration of 0.0375 ppm would be assumed for the backfill), and 3) recalculating the overall spatial average PCB concentration.

For response actions involving the placement of a surface cover or engineered barrier, the effectiveness of the response actions will be determined in a similar manner as described above. For those Theissen polygons identified for a surface cover/engineered barrier, the materials to be used in the construction of the new cover/barrier will be incorporated into re-calculations concerning the spatial average PCB concentration of the uppermost depth increment. Such calculations will assume that the cover materials will contain PCBs as determined through sampling of the actual materials (or if non-detect, at ½ the typical laboratory detection limit of 0.075 ppm so that a PCB concentration of 0.0375 ppm would be assumed). Soils present at all depths below an anticipated surface cover or engineered barrier will be excluded from subsequent spatial average calculations, and the spatial average concentrations will be recalculated for the remaining portion(s) of the averaging area to

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determine the need for a further extension of the surface cover or engineered barrier to achieve the applicable PCB Performance Standards.

TABLE E-1
SPATIAL AVERAGING AREAS AND DEPTH INTERVALS

		Spatial Averaging Depth Intervals (see note 1)						
Area	0' to 1'	0' to 3'	1' to 3'	1' to 6'	0' to 15'	1' to X'		
GE Plant Area (see note 2)								
20s Complex (Area 3)	Х			Х	Х			
30s Complex (Area 2)	Х			Х	Х			
40s Complex (Area 1)				Х	Х			
East Street Area 2 - South								
60s Complex (Area 4A)	Х			Х	Х			
Former Gas Plant / Scrap Yard Area (Area 4B)	Х			Х	Х			
Potential Future City Recreational Area (Area 4C) (see note 3)			Х					
200-Foot Wide Industrial Averaging Strip (Area 4D)	Х			Х	Х			
200-Foot Riparian Removal Zone (Area 4E) (see note 4)	Х		Х		Х			
East Street Area 2 - North (Area 5)	Х			Х	Х			
East Street Area 1 - North (Area 6) (see note 4A)	Х			Х	Х			
U.S. Generating Company (Area 8)	X			Х	Х			
Hill 78 Area - Remainder (excluding Consolidation Areas) (Area 7)	Х			Х	Х			
Unkamet Brook Area (excluding former landfill)								
GE Plastics Area (Area 9E)	Х			Х	Х			
OP-1/OP-2 Area (Area 9C)	Х			Х	Х			
Area East of Landfill (excluding Inundated Wetlands) (Area 9F)	Х		Х		Х			
OP-3 Area (Area 9D) (non-GE-owned) (with ERE)	Х			Х	Х			
OP-3 Area (Area 9D) (non-GE-owned) (without ERE)	Х	Х		Х	Х			
Other Non-GE-Owned Commercial Area (Area 9I) (with ERE)	Х			Х	Х			
Other Non-GE-Owned Commercial Area (Area 9I) (without ERE)	Х	Х		Х	Х			
Recreational Area Near OP-3 (Area 9M) (with ERE)	Х		Х		Х			
Recreational Area Near OP-3 (Area 9M) (without ERE)	Х	Х			Х			
Floodplain Recreational Areas (Areas 9A 9B) (with EREs)	Х		Х		Х			
Floodplain Recreational Areas (Areas 9A 9B) (without EREs)	Х	Х			Х			
East of Landfill - Inundated Wetlands (2 wetland areas) (Areas 9G, 9H)	Х							
Unkamet Brook Sediments (3 reaches) (Areas 9J, 9K, 9L)	Х							
Former Oxbow Areas								
Residential Properties (see notes 5 and 6)	Х					Х		
Commercial/Industrial Properties (with EREs) (see notes 5 and 7)	Х			Х	Х			
Commercial/Industrial Properties (without EREs) (see notes 5 and 7)	Х	Х		Х	Х			
Recreational Properties (with EREs) (see notes 5 and 7)	Х		Х		Х			
Recreational Properties (without EREs) (see notes 5 and 7)	Х	Х			Х			
GE-Owned Parking Lots (Lyman and Newell) (see note 4)	Х		Х		Х			
GE-Owned Wooded Area (Newell Street II)	Х		Х		Х			
GE-Owned Riparian Strip (Newell Street I)	Х		Х		Х			

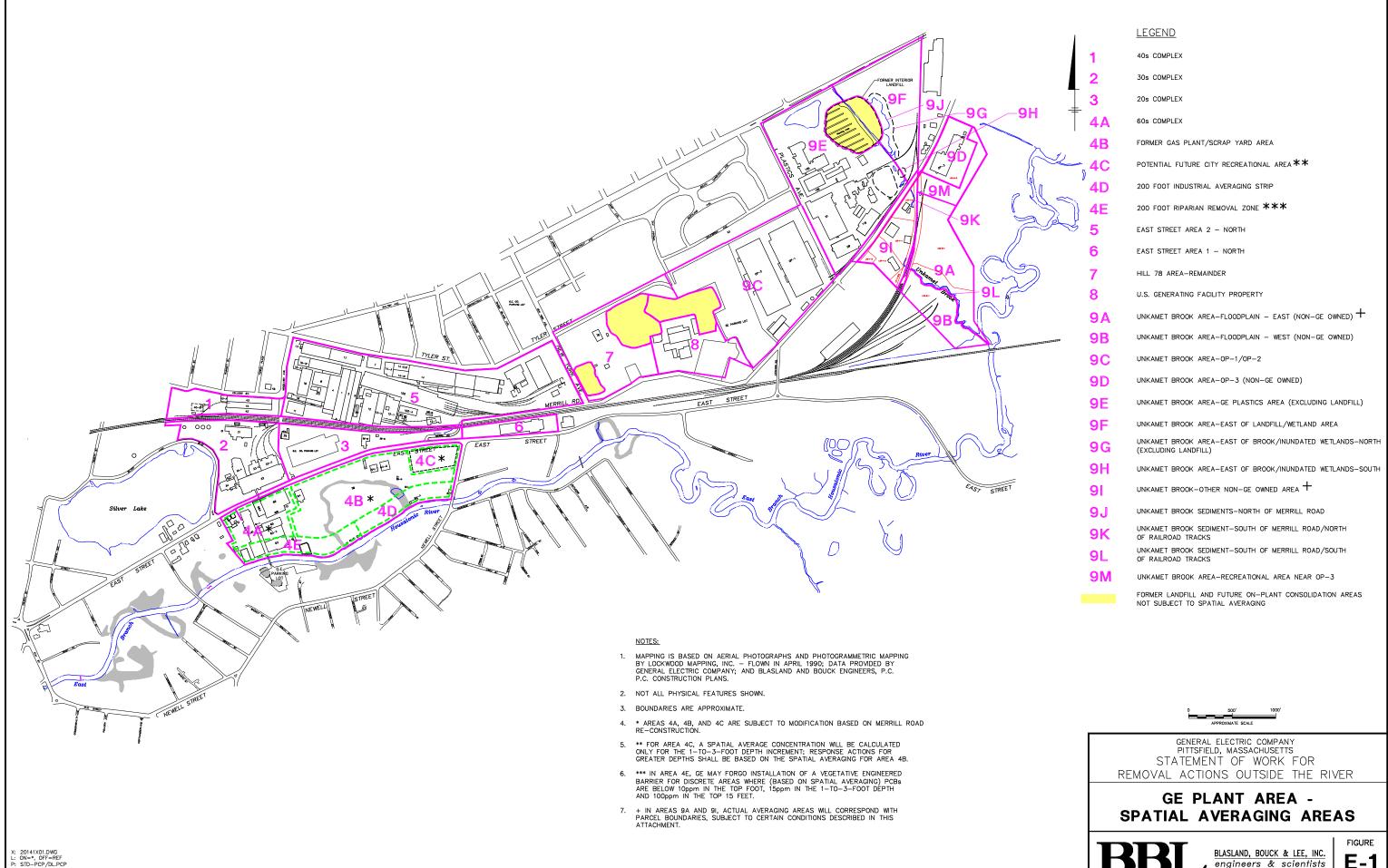
#### TABLE E-1

# SPATIAL AVERAGING AREAS AND DEPTH INTERVALS (Cont'd)

	Spatial Averaging Depth Intervals (see note 1)						
Area	0' to 1'	0' to 3'	1' to 3'	1' to 6'	0' to 15'	1' to X'	
Housatonic River - 1.5-Mile Reach							
Current Residential Properties (see notes 5 and 6)	Х					Х	
Current Recreational Properties (with EREs) (see notes 5 and 7)	Х		Х		Х		
Current Recreational Properties (without EREs) (see notes 5 and 7)	Х	Х			Х		
Current Commerical/Industrial Properties (with EREs) (see notes 5 and 7)	Х			Х	Х		
Current Commerical/Industrial Properties (without EREs) (see notes 5 and 7)	Х	Х		Х	Х		
Housatonic River - Downstream of Confluence	•	•		•		•	
Current Residential Properties (see notes 5, 6, and 8)	Х					Х	
Silver Lake Bank Areas							
Current Residential Properties (banks only) (see notes 6 and 9)	Х					Х	
Current Non-Residential Properties (with EREs) (see note 9)	Х		Х				
Current Non-Residential Properties (without EREs) (see note 9)	Х	Х					

#### Notes:

- 1. X = Intervals where spatial averaging will be performed.
- 2. The designated averaging areas at the GE Plant Area are subject to the conditions and possible modifications described in Section 2.1 of this attachment.
- 3. For this area, spatial averaging will not be separately performed for depth intervals of 1- to 6-feet or 0- to 15-feet. For such intervals, this area will be included in the former gas plant/scrap yard area.
- 4. In the 200-foot riparian removal zone and the GE-owned Lyman Street and Newell Street parking lots, GE may forgo installation of a vegetative engineered barrier for discrete areas where (based on spatial averaging) PCBs are below 10 ppm in the top foot, 15 ppm at the 1- to 3-foot depth, and 100 ppm in the top 15 feet.
- 4A. For the non-GE-owned portion of this area, spatial averaging will be performed for the same depth intervals specified below for Area 9D (depending on whether an ERE is obtained).
- 5. The specific averaging areas for these properties will be determined as described in Section 2.1 of this attachment.
- 6. At residential properties, spatial averaging will be performed for the 0- to 1-foot and 1- to X-foot depth intervals, where X equals the maximum depth at which PCBs were detected (up to a maximum depth of 15 feet).
- 7. If PCB soil data does not exist to 15 feet, the spatial average PCB calculations for the 0- to 15-foot depth increment shall extend to whatever depth sampling data exist.
- 8. For current residential properties downstream of the confluence, spatial averaging will also be performed for the 0- to 0.5-foot depth interval on the portion of each property that does not constitute an Actual/Potential Lawn, for purposes of applying STM criteria.
- 9. For these properties, spatial averaging will be separately performed for the bank soils at each residential property subject to this SOW and each commercial property and at the remaining recreational averaging area shown on Figure 2-25 of this SOW.
- 10. EREs = Environmental Restrictions and Easements.



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